JOINT EPA - HUD CURRICULUM

March 2009

Model Certified Lead Dust Sampling Technician Training Course

STUDENT MANUAL

EPA-740-R-09-005

This Course Curriculum

The U.S. Environmental Protection Agency (US EPA) and Office of Housing and Urban Development (HUD) have produced this course to teach individuals how to conduct non-abatement lead dust clearance testing. This course is designed to be taught over an 8-hour time period with 2 hours devoted to hands-on training. For certification purposes, the course can be taught by either an EPA-accredited training provider, or a training provider accredited by an authorized State, Tribe, or Territory.

Objectives for the Course

At the end of the course, students will be able to:

- Understand the Federal, State, and Indian Tribe regulatory requirements for lead dust clearance testing;
- Conduct a visual inspection and correctly identify visible dust, debris, and deteriorated paint;
- Appropriately determine where to take dust samples and how to develop a sampling strategy.
- Collect dust samples in accordance with standard acceptable procedures;
- Interpret the results of a laboratory analysis for lead in dust correctly;
- Apply these skills to conduct an appropriate lead dust clearance test in post-renovation and other circumstances;
- Write a complete, accurate, and understandable report of sampling results; and
- Explain the results to the client.

Audience for the Course

Organizations that will be interested in this course include:

- State and local public agencies that administer Federal funds for housing;
- Non-profit and community housing organizations, particularly those that assist public agencies in administering Federal housing funds;
- State and local health departments;
- Home inspection firms; and
- Lead and other environmental services firms.

Appropriate staff to take this course will include:

- Housing quality standards (HQS) inspectors;

- Rehabilitation specialists;
- Home inspectors; and
- Other staff who are involved in evaluating buildings.

Overview of Lead Dust Sampling Technician Training Curriculum

This training course consists of three parts in the six chapters including:

Part 1: Introduction

- **Chapter 1: Introduction** provides an overview of the course, the role of a lead dust sampling technician, and the relevance of the EPA Renovation, Repair, and Painting (RRP) Rule and HUD's Lead Safe Housing Rule (LSHR).

Part 2: Skills

- **Chapter 2: Visual Inspection** explains how to perform a visual inspection for paint chips, dust and debris and, in some circumstances, deteriorated paint.
- **Chapter 3: Lead Dust Wipe Sampling** describes how to prepare for and collect dust wipe samples.
- **Chapter 4: Selecting a Laboratory and Interpreting Results** describes how to select an accredited lab, how to submit samples, and how to interpret the results and determine if they are acceptable.

Part 3: Application

- **Chapter 5: Writing the Report** covers how to prepare the report and explain the results to the client.
- **Chapter 6: Putting the Skills Together** gives the students an opportunity to put their new skills to the test in a series of desktop and hands on exercises, that cover the issues of sample location selection, dust wipe sampling, interpreting laboratory results.

Course Materials

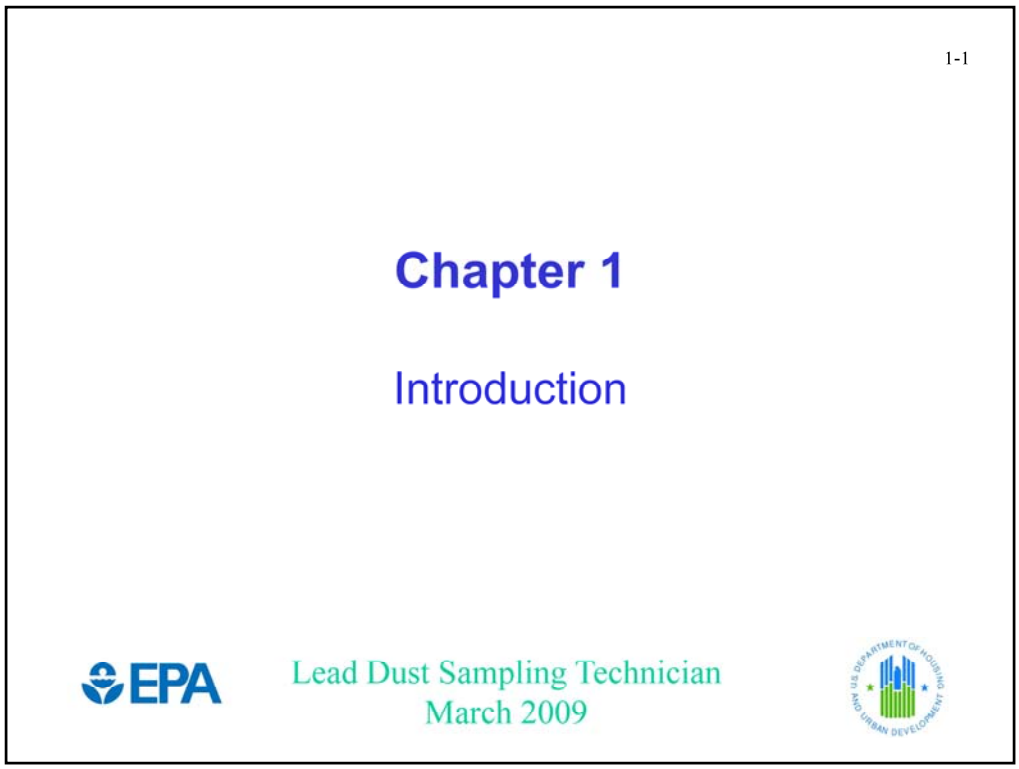
Course materials include slides, an instructor manual, a student manual, and a *Lead Dust Sampling Technician Field Guide.*

- **Slides.** Each chapter in this course has slides that highlight key points to be made during the presentation. The slides also include pictures, diagrams, and other visual aids.
- **Student Manual.** The student manual includes everything in the instructor manual except the instructor overview and the instructor notes that appear at the front of every chapter in the instructor manual. In the back of the manual there are two appendices that contain useful resources for both instructors and students – an excerpt from the final

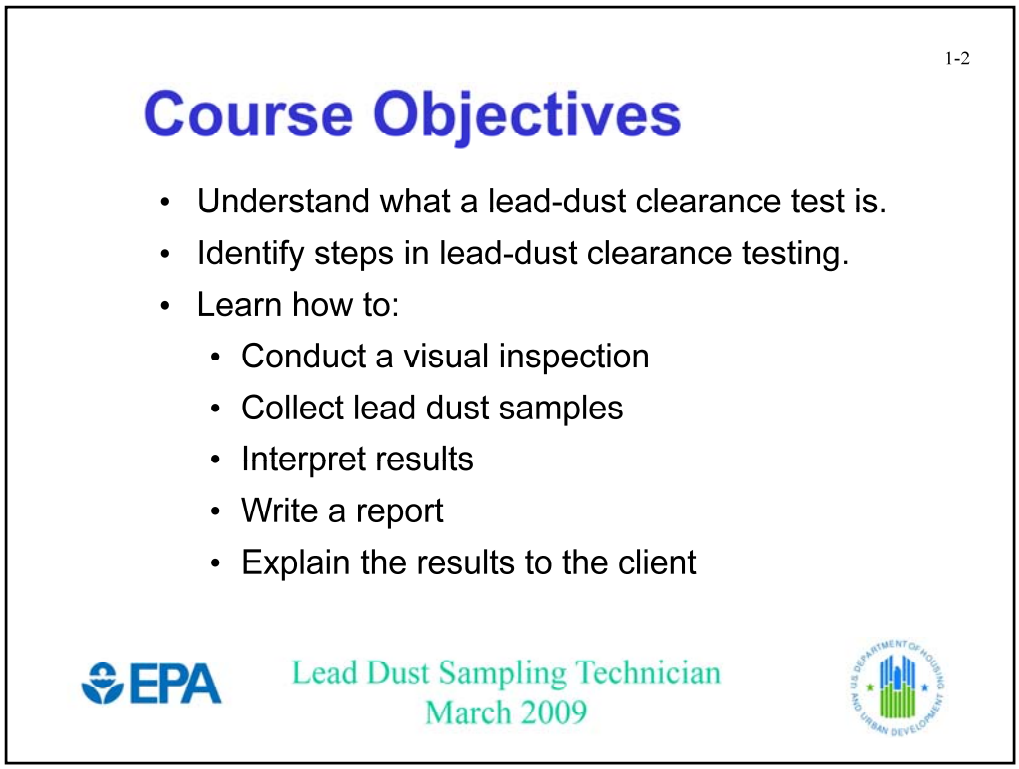
Renovation, Repair, and Painting rule (Appendix A) and the Protect Your Family from Lead in the Home pamphlet (Appendix B).

- **Lead Dust Sampling Technician Field Guide.** The Lead Dust Sampling Technician Field Guide provides protocols for conducting post-renovation clearance under EPA's RRP Rule and clearance examinations under HUD's LSHR in housing and child-occupied facilities built before 1978. This guide also provides Federal standards for lead in dust. Refer to the *Lead Dust Sampling Technician Field Guide* as appropriate.

Chapter 1: Introduction

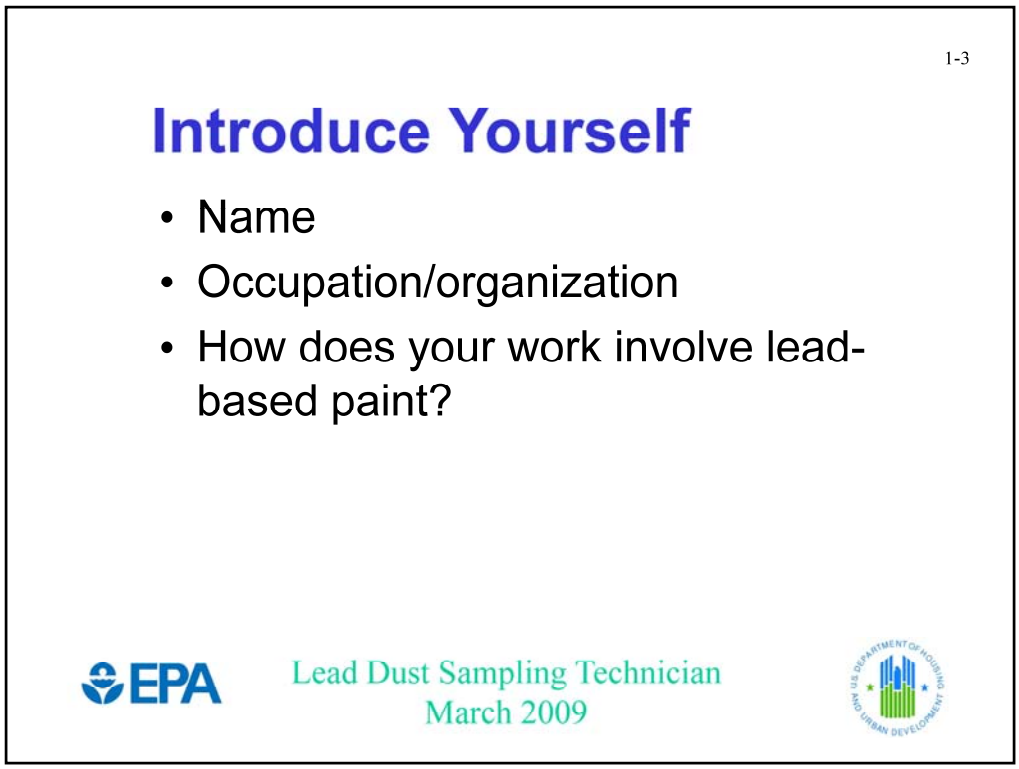


Welcome to the Lead Dust Sampling Technician Training Course.



The EPA has provided this model curriculum to teach individuals how to conduct lead dust clearance testing after renovation activities.

Lead dust clearance testing is often performed to find out whether lead dust remains after renovation, repair, or painting. It is required by HUD's LSHR regulations for most renovations. By the end of the course, students will be able to perform the actions listed above.


1-3
Introduce Yourself
• Name
• Occupation/organization
• How does your work involve lead-based paint?
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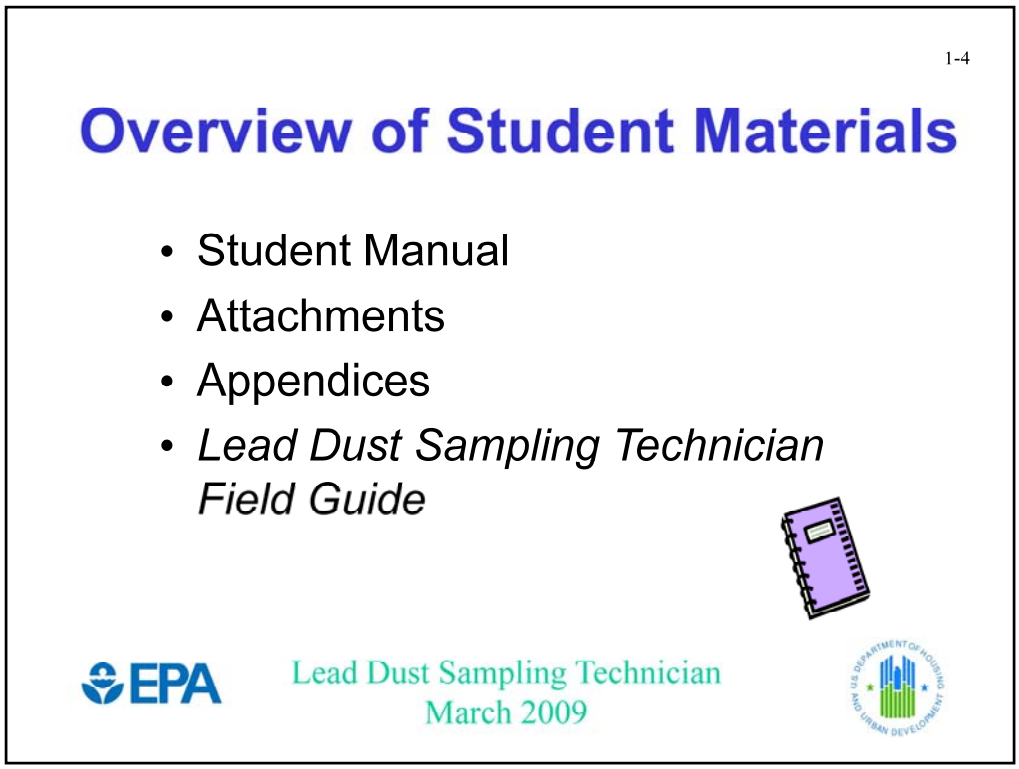
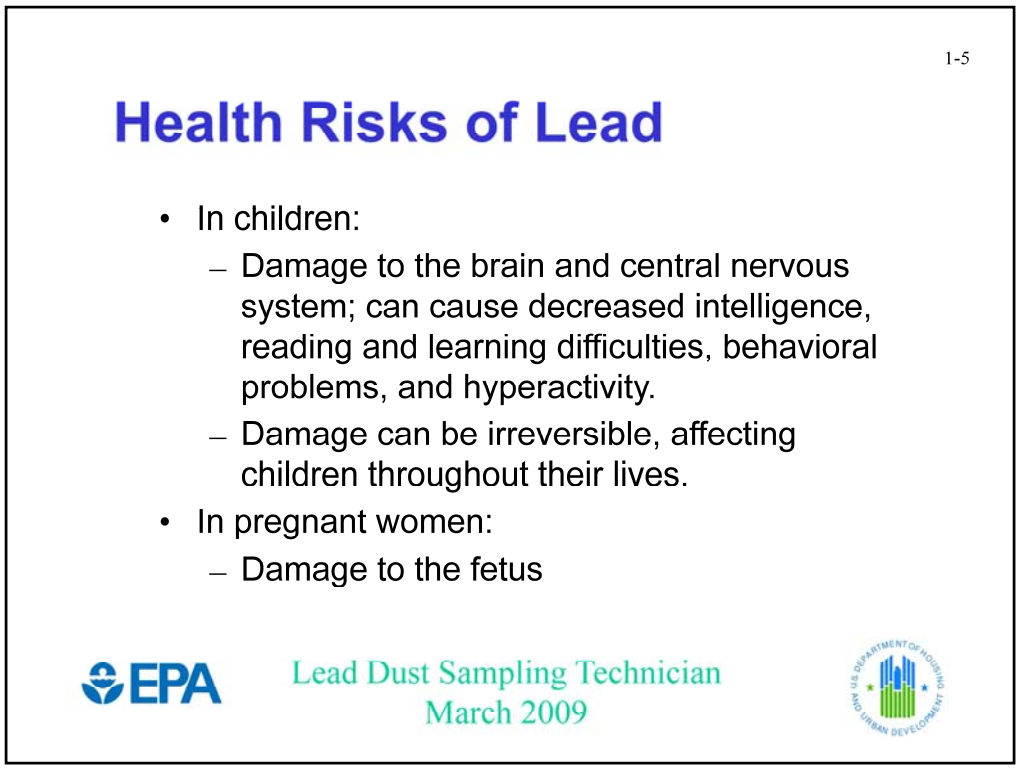


The student materials include a student manual, attachments, appendices, and a copy of the *Lead Dust Sampling Technician Field Guide*.

- The student manual contains copies of the slides that are used by the instructor during the course.
- The attachments and appendices provide important summaries, checklists, tables, and tools you can use.
- The *Lead Dust Sampling Technician Field Guide* outlines key points and procedures in one easy-to-read reference tool that can be taken along on the job.



Children under 6 are most at risk from small amounts of lead.

Children are at a greater risk than adults. During normal and frequent playing or hand-to-mouth activity, children may swallow or inhale lead dust from their hands, toys, food, or other objects.

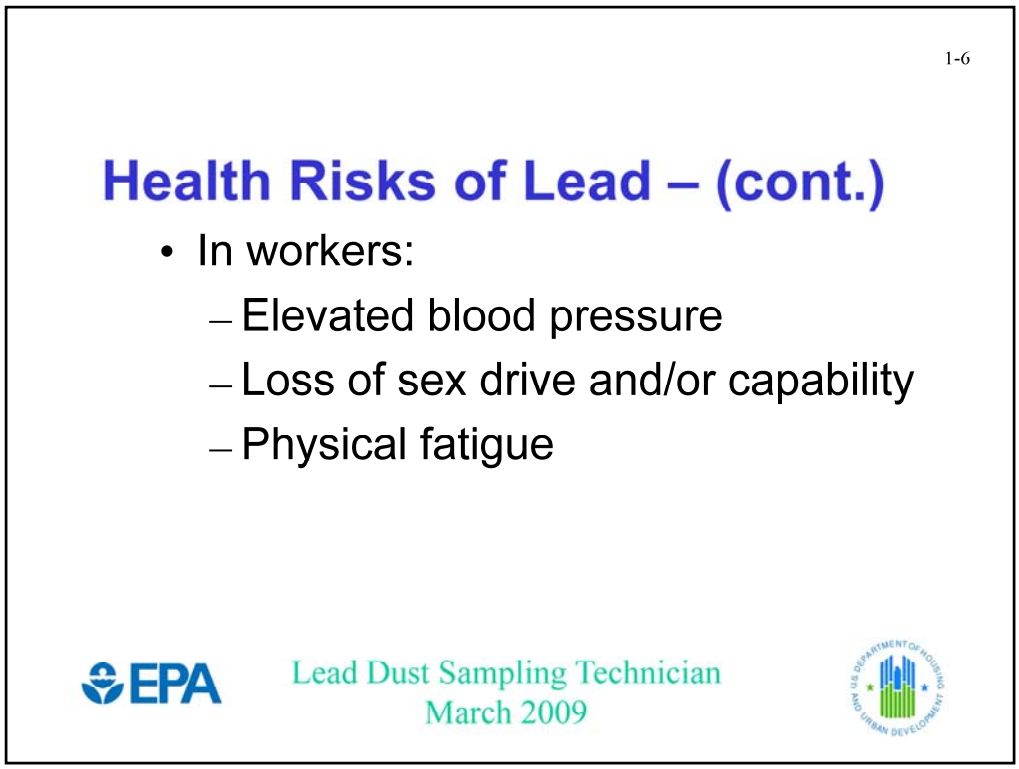
In children, lead may cause:

- Nervous system and kidney damage
- Decreased intelligence, attention deficit disorder, and learning disabilities
- Speech, language, and behavioral problems

Among adults, pregnant women are especially at risk from exposure to lead.

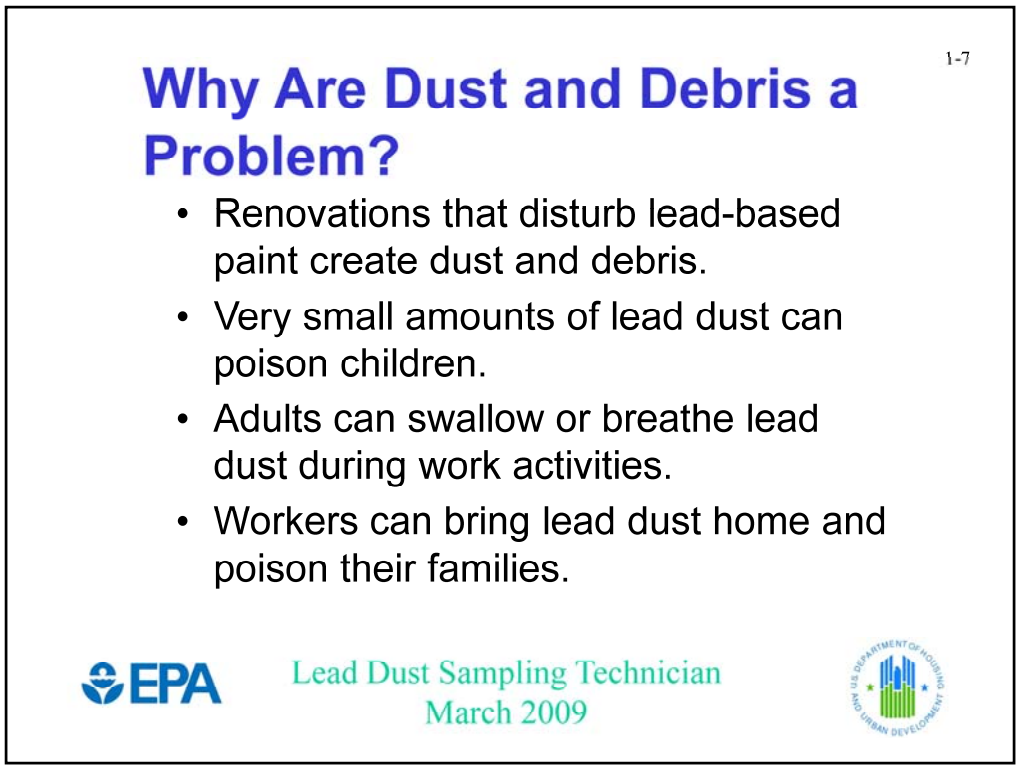
Lead is passed from the mother to the fetus and can cause:

- Miscarriage
- Premature birth
- Brain damage
- Low birth weight



Health effects of lead in adults include:

- Elevated blood pressure
- Reproductive problems in men and women
- Digestive problems
- Nerve disorders
- Memory and concentration problems
- Sexual disorders
- Muscle or joint pain



Dust and debris from renovation, repair, and painting jobs in pre-1978 housing and child-occupied facilities may contain lead.

Pre-1978 paint may contain lead.

Common renovation activities like sanding, scraping, cutting, and demolition can create hazardous lead dust and chips by disturbing lead-based paint.

Some tasks, such as power sanding, open flame burning, and the use of heat guns above 1100 degrees Fahrenheit, create large amounts of extremely fine lead dust that is very difficult to clean up.

Small amounts of lead dust can poison children and adults.

A tiny amount of lead can be extremely harmful.

Lead dust particles are often so small that you cannot see them, yet you can breathe or swallow them. These smaller, inhaled or swallowed lead dust particles are more easily absorbed by the body than larger particles, and can therefore more easily cause poisoning.

Lead dust may be breathed or swallowed by children, residents, and workers.

Through normal hand-to-mouth activities, children may swallow or inhale lead dust on their hands, toys, food, or other objects. Children may also ingest paint chips.

Adults can swallow or breathe lead dust during work activities.

- When workers perform activities such as scraping and sanding by hand, or use a power sander or grinding tool, dust is created. The dust goes into the air that they breathe.
- If workers eat, drink, smoke, or put anything into their mouths without washing up first, they may swallow the lead dust present.

Regulations Addressing Lead Hazards in Housing

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- To address the issue of lead hazards in housing, EPA and HUD have issued several regulations.
- EPA currently oversees the training and certification of abatement contractors, inspectors, and risk assessors.
- HUD's Lead Safe Housing Rule (LSHR) addresses lead hazards in Federally owned and assisted housing.
- In April 2008, EPA issued the Renovation Repair and Painting (RRP) Rule to address lead hazards created during renovation.

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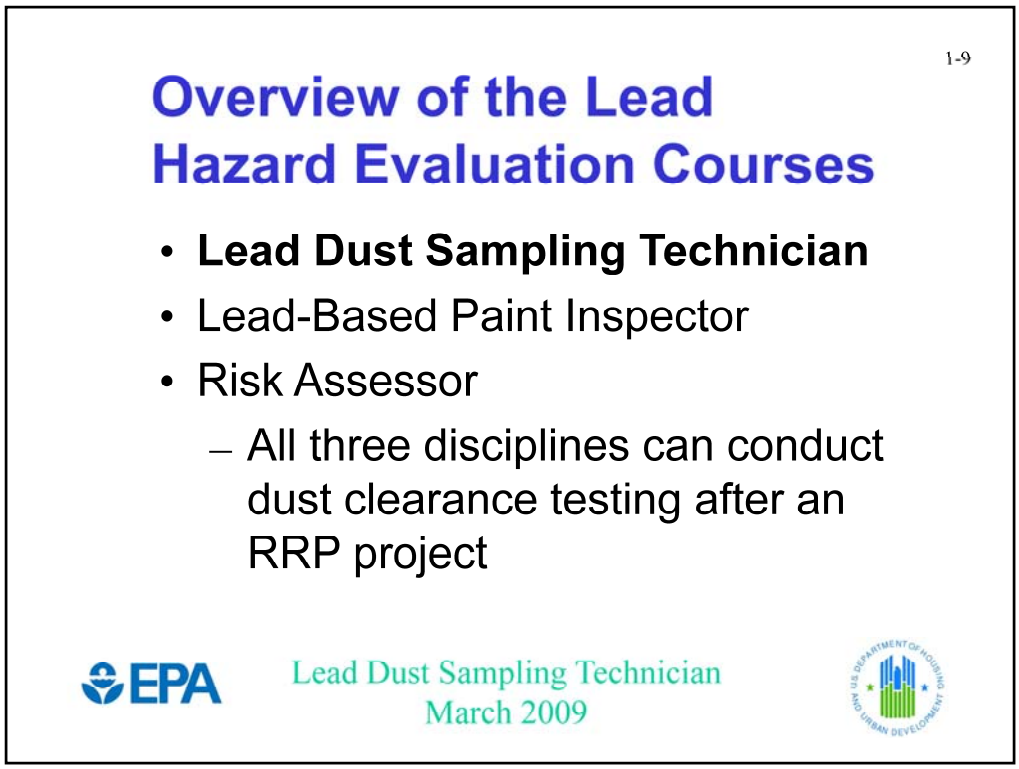

There are three courses for professionals who wish to be certified to conduct evaluations for lead dust, lead hazards and/or lead-based paint:

- **Lead Dust Sampling Technician:** This 8-hour training course teaches you how to become a lead dust sampling technician. You will learn how to conduct a visual inspection, collect dust wipe samples, interpret results, and write a lead dust clearance test report.
- **Lead-Based Paint Inspector:** To become a certified lead-based paint inspector, you must take a 24-hour training course. In the lead-based paint inspector course, you will learn the skills and protocols for conducting a paint inspection. A lead-based paint inspection is a surface-by-surface investigation to locate all lead-based paint on a property. We will talk more about what a paint inspection is in the next chapter.
- **Risk Assessor:** To become a certified risk assessor, you must successfully complete a lead-based paint inspector course plus an additional 16-hour risk assessor course. In the risk assessor course, you will learn the skills and protocols necessary for conducting risk assessments. A risk assessment is an on-site investigation to identify all lead-based paint hazards on a property.

Today you are taking the LDST Training Course.

Refer to **Attachment 1-A: Comparing Lead Evaluation Professionals** for additional information.

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Lead Dust Sampling Technician

- EPA's RRP rule also established the lead dust sampling technician discipline.
- To work as a dust sampling technician, an individual must successfully complete this training course. The course completion certificate will serve as your certification.
- Dust sampling technicians are used in both EPA's and HUD's regulations.

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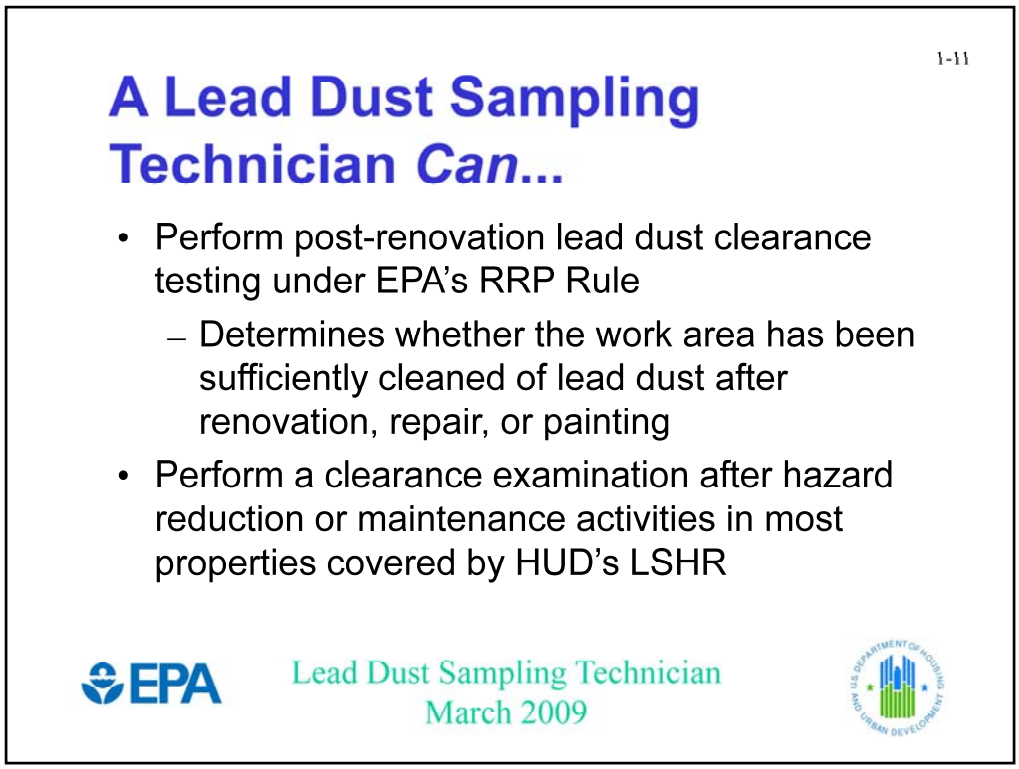


A lead dust sampling technician can perform lead dust clearance testing, but not if associated with an abatement.

The purpose of lead dust clearance testing after renovation, repair, or painting activities that disturb lead-based paint is to determine if a work area is safe for re-occupancy. These activities can create lead dust, so proper cleanup is critical.

While lead dust sampling technicians can conduct post-renovation lead dust clearance testing, they are not allowed to conduct post-abatement clearance. Clearance after abatement must be done by a certified risk assessor or a lead-based paint inspector.

Abatements are projects designed to permanently remove or eliminate lead-based paint and lead-based paint hazards.

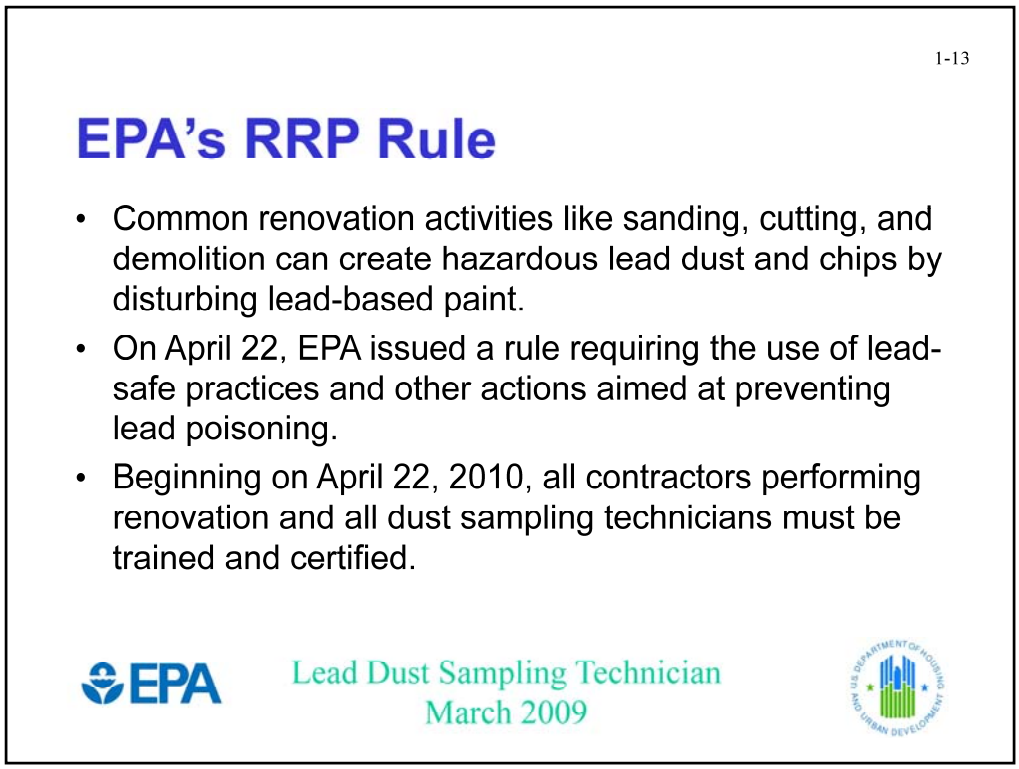
Abatement does not include renovation, remodeling, landscaping, or other activities, when such activities are not designed to permanently eliminate lead-based paint hazards, but, instead, are designed to repair, restore, or remodel a given structure or dwelling, even though these activities may incidentally result in a reduction or elimination of lead-based paint hazards.

So, if a renovation job involves abatement, the lead dust sampling technician cannot perform lead dust clearance testing on the abatement part of the job. Make sure you understand what type of work was done before conducting lead dust clearance testing.

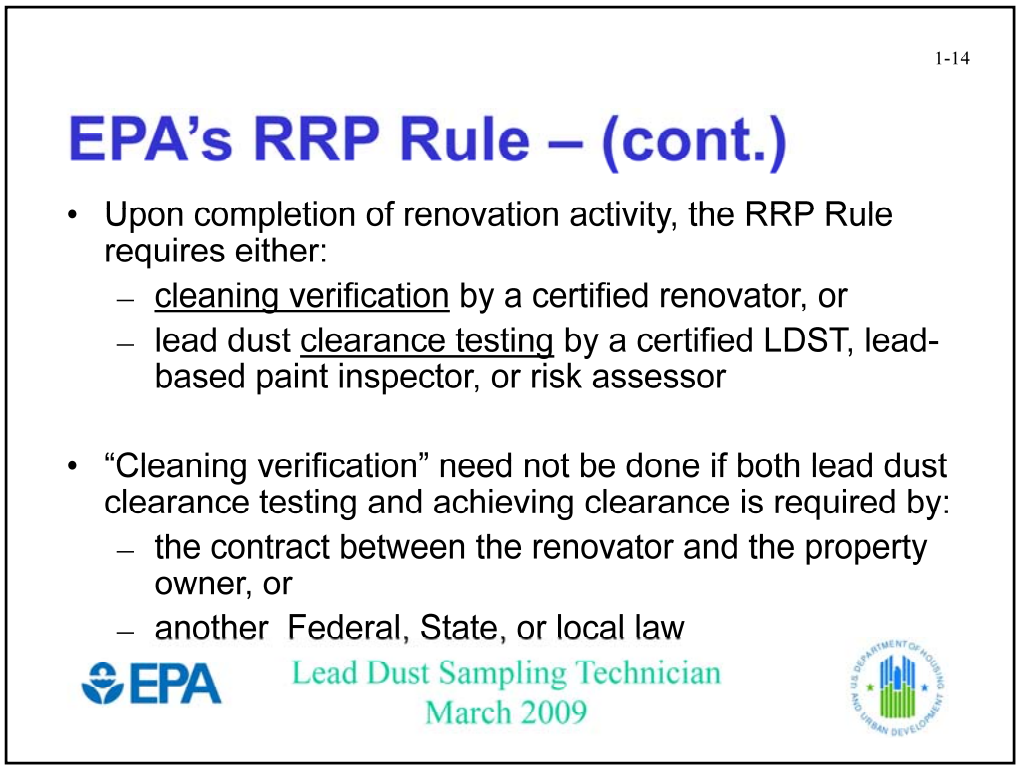
In addition, a lead dust sampling technician is not trained to test paint for lead content. Paint sampling must be done by a lead-based paint inspector or risk assessor.

Finally, a lead dust sampling technician is not trained to sample soil. Soil sampling must be done by a certified lead-based paint inspector or risk assessor.

NOTE: HUD does not allow sampling technicians to work on abatement projects. HUD also requires that a certified risk assessor or a certified lead-based paint inspector approve the work of the clearance sampling technician and sign the clearance report. Sampling technicians may work on single-family properties or individually-specified dwelling units and associated common areas in a multi-unit property as directed by a certified risk assessor or a certified lead-based paint inspector, but may not themselves select dwelling units or common areas for testing.



Beginning April 22, 2010, contractors performing RRP projects that disturb lead-based paint in homes, child care facilities, and schools built before 1978 must be certified and must follow specific work practices to prevent lead contamination.

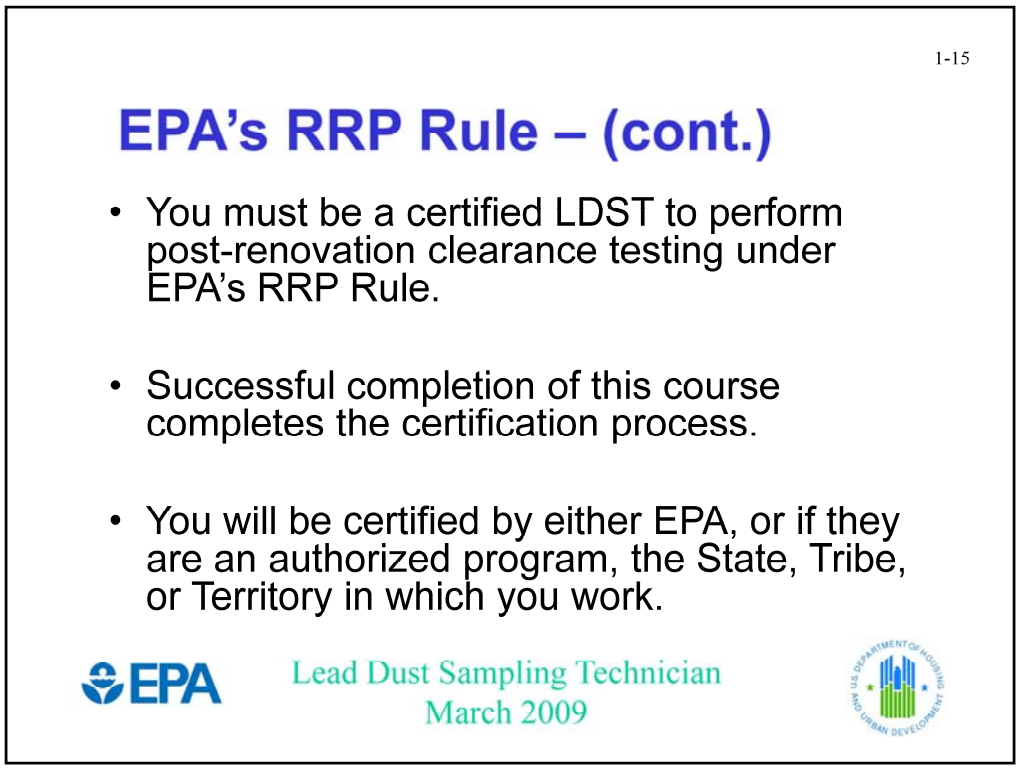


The cleaning verification process involves a visual inspection of the work area, followed by wiping of the windowsills, floors, and countertops with wet disposable cleaning cloths and comparing the wipes to a cleaning verification card.

Cleaning verification must be performed by a certified renovator; it cannot be done by the lead dust sampling technician and sampling technicians are not allowed to perform clearance on abatement projects or on abatement parts of renovation projects.

See **Appendix A** for a portion of the EPA RRP final rule.

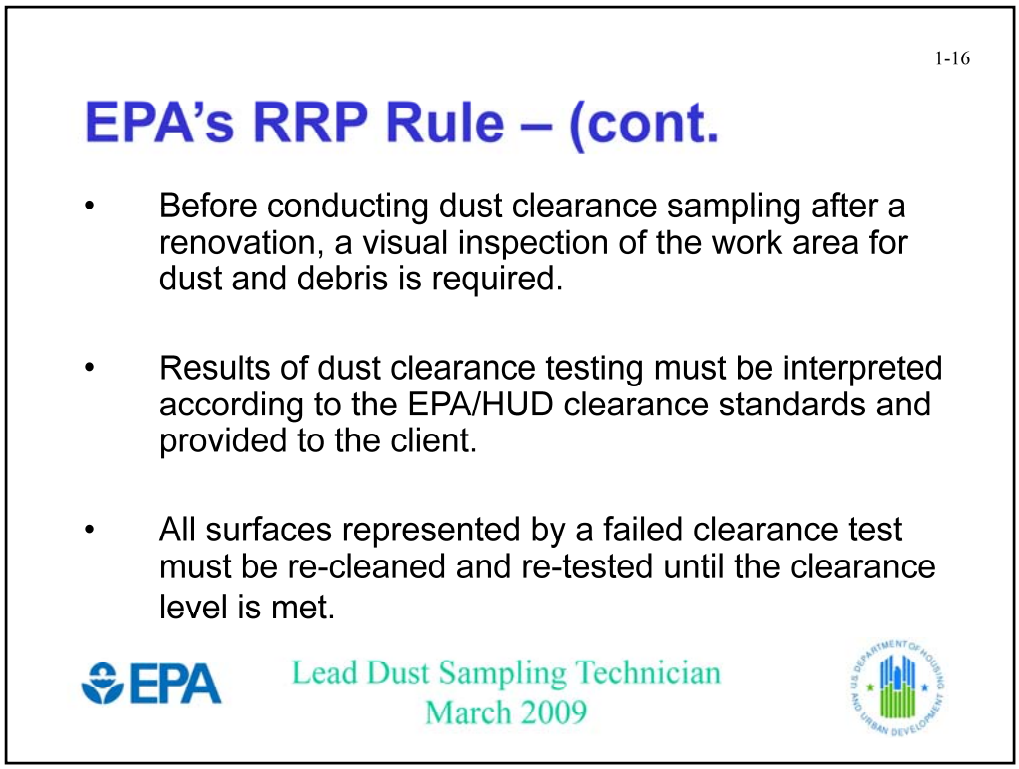
Note: A certified sampling technician may work on HUD-assisted single-family properties or individually-specified dwelling units and associated common areas in a multi-unit property. The sampling technician may work on a random sampling of dwelling units or common areas in multifamily properties only as directed by a certified risk assessor or a certified lead-based paint inspector, but the sampling technician may not select dwelling units or common areas for testing, and the risk assessor or inspector must approve the sampling technician's work and sign the clearance report for the report to be acceptable.



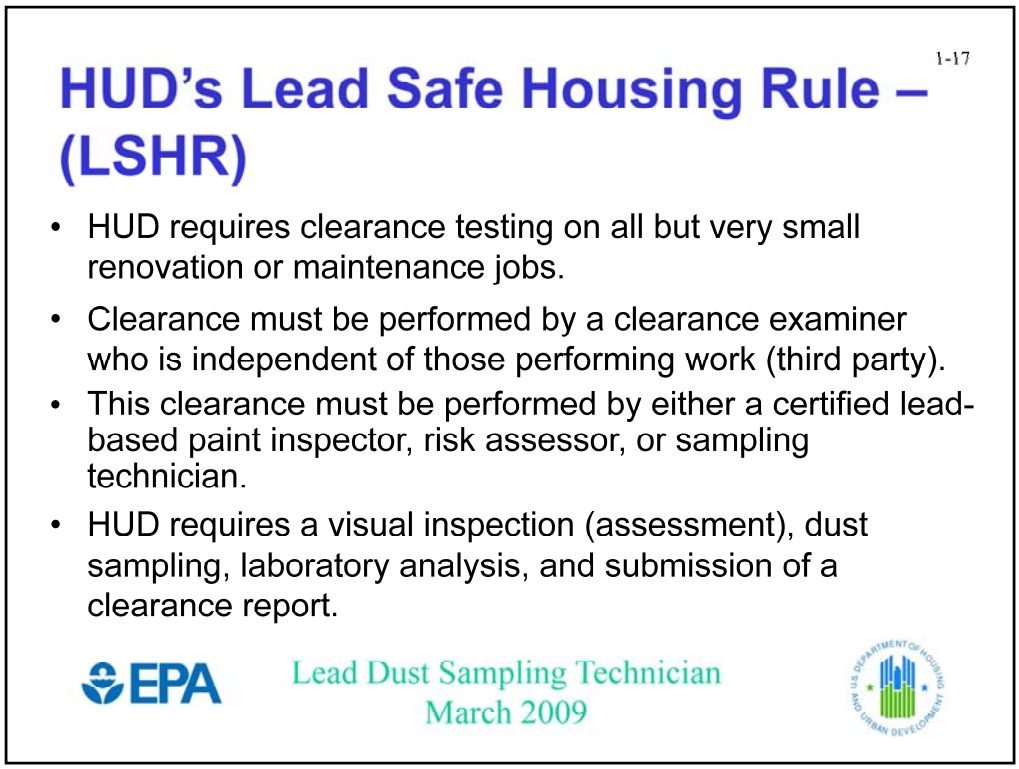
To conduct a post-renovation clearance examination, the individual must be a certified lead dust sampling technician, lead-based paint inspector, or risk assessor.

EPA LDST certification allows the certified individual to perform post-renovation lead dust clearance testing in residential housing and child-occupied facilities. Certified lead dust sampling technicians cannot conduct post-abatement clearance testing.

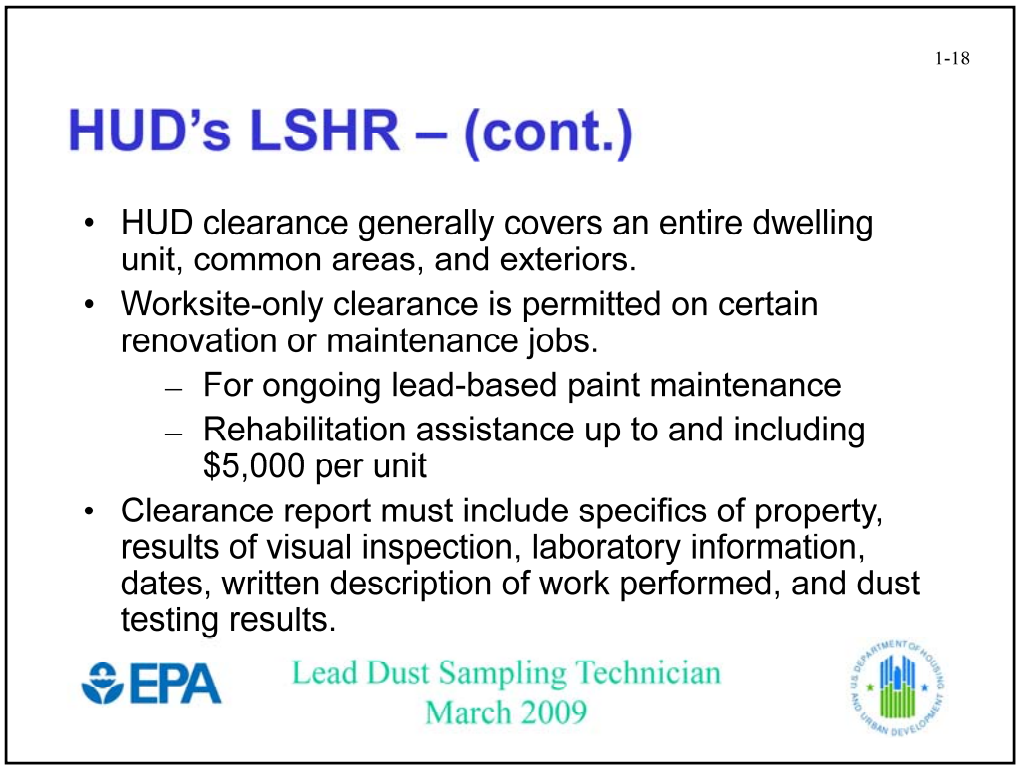
When going to a worksite, lead dust sampling technicians must have a copy of their initial course completion certificate and most recent refresher training course completion certificate.



More details on all these topics are discussed later in the course.

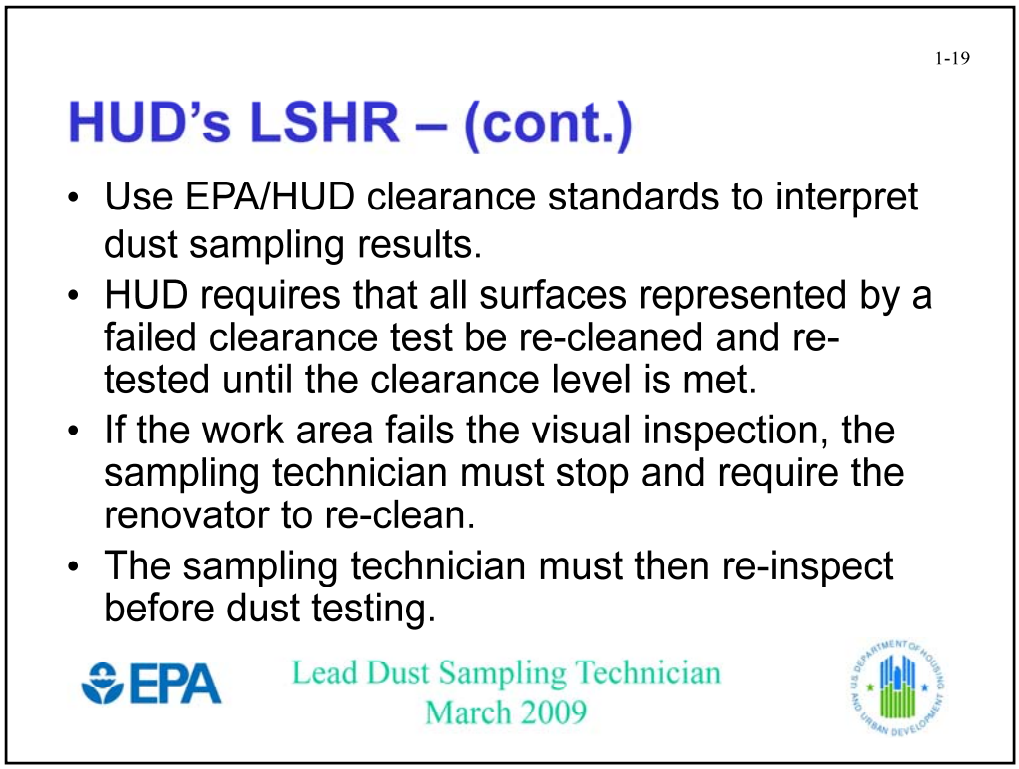


HUD's LSHR requires that lead hazards be corrected in target housing receiving Federal housing assistance or being sold. It also requires clearance dust sampling as a routine part of every such activity, unless very small amounts of paint are disturbed.



Clearance must be on the entire unit unless the worksite has been properly contained or the LSHR specifically permits worksite-only clearance. The LSHR permits worksite-only clearance for units receiving rehabilitation assistance up to and including $5,000 and for ongoing lead-based paint maintenance activities.

Sampling requirements will be discussed in later chapters.

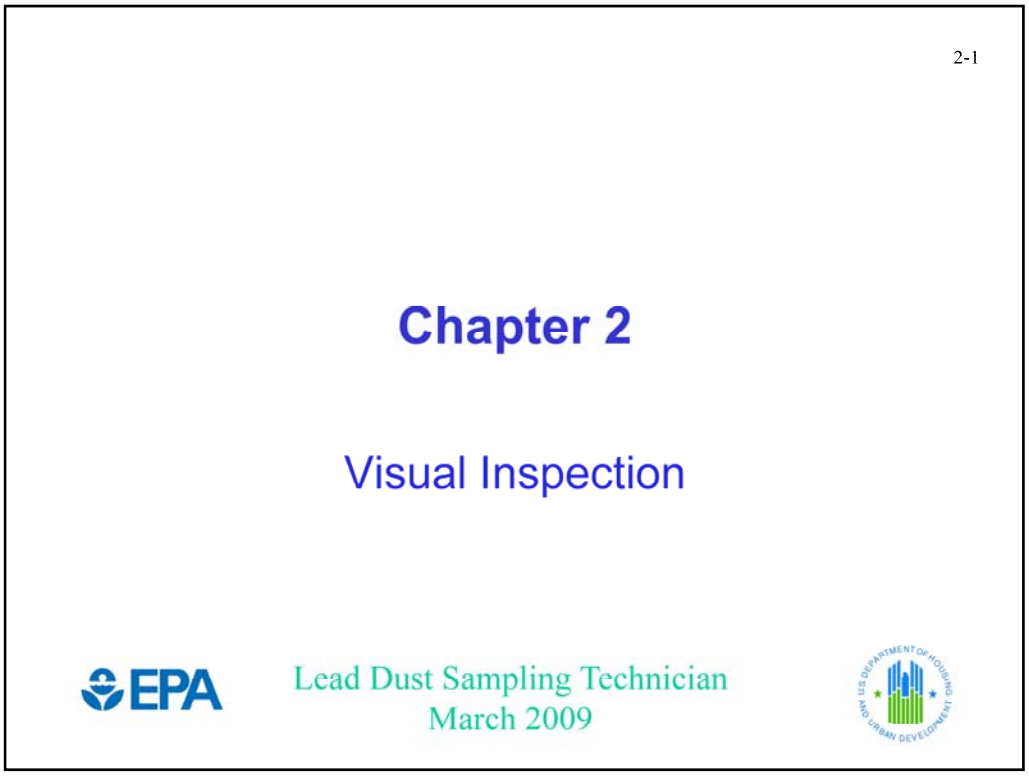


Details on these topics are provided later in the course.

Attachment 1-A: Comparing Lead Evaluation Professionals

	LEAD DUST SAMPLING TECHNICIAN	LEAD-BASED PAINT INSPECTOR	LEAD-BASED PAINT RISK ASSESSOR
Is qualified to perform the following types of evaluations	▪ Post-renovation clearance testing ▪ Clearance after hazard reduction or maintenance activities in HUD-covered properties	▪ Paint inspections ▪ All clearance	▪ Risk assessments ▪ Paint inspections ▪ All clearance
Is <u>not</u> qualified to perform	▪ Post-abatement clearance ▪ Soil and paint testing	▪ Risk assessments	
Training/Certification required to perform evaluations	▪ Certification ▪ 8 training hours	▪ Certification ▪ 24 training hours	▪ Certification ▪ 40 training hours (24 inspector hours and 16 risk assessor hours)
Skills	Perform: ▪ Visual inspection ▪ Lead dust wipe sampling To identify dust lead hazards after renovation.	Perform: ▪ Visual inspection ▪ Paint chip sampling ▪ Paint testing by XRF ▪ Lead dust wipe sampling for clearance To identify the existence and location of lead-based paint.	Perform: ▪ Interview of residents ▪ Visual inspection ▪ Lead dust wipe sampling ▪ Soil sampling ▪ Paint chip sampling ▪ XRF testing To assess a unit, identify all lead hazards, and recommend methods for lead hazard reduction.

Chapter 2: Visual Inspection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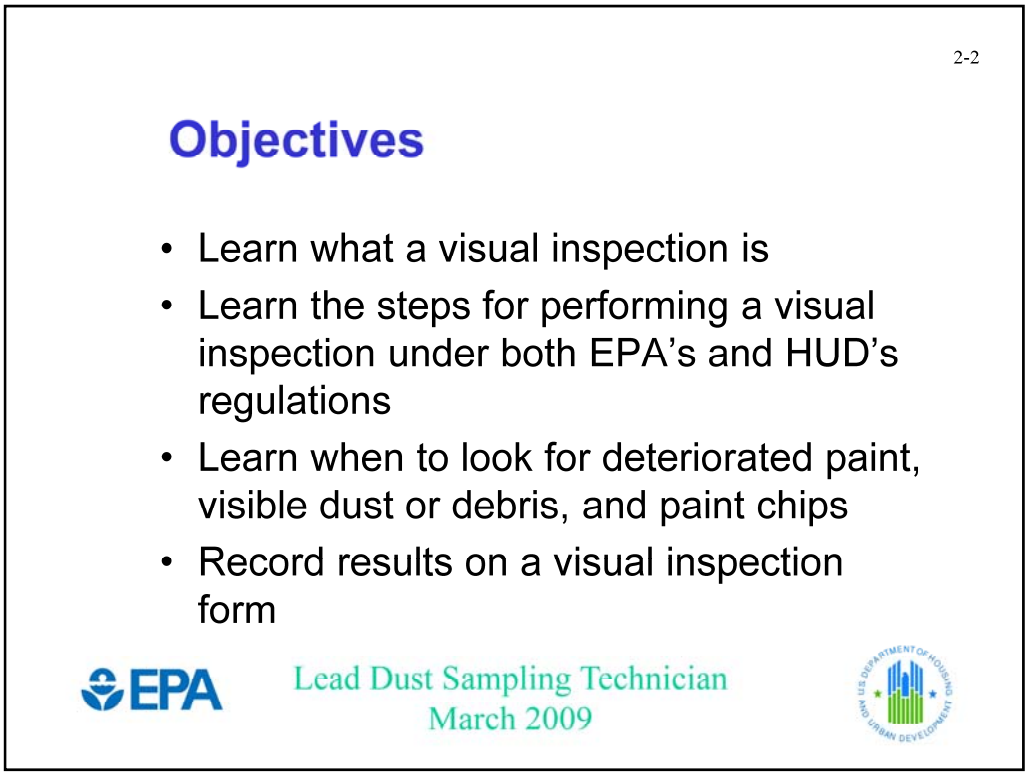
Chapter 2
Visual Inspection
EPA
Lead Dust Sampling Technician
March 2009



This chapter will outline the steps a lead dust sampling technician must take to perform a visual inspection. A visual inspection is the first activity to perform on site for any lead dust clearance testing. This chapter will also highlight the differences in visual inspection between EPA's RRP Rule and HUD's LSHR.

2-3

Visual Inspection

- Under both EPA's and HUD's rules, visual inspection is the first step in the clearance process.
- Under EPA's rule, the visual inspection is designed to determine if the area is free of visible dust and debris before lead dust clearance testing can begin.

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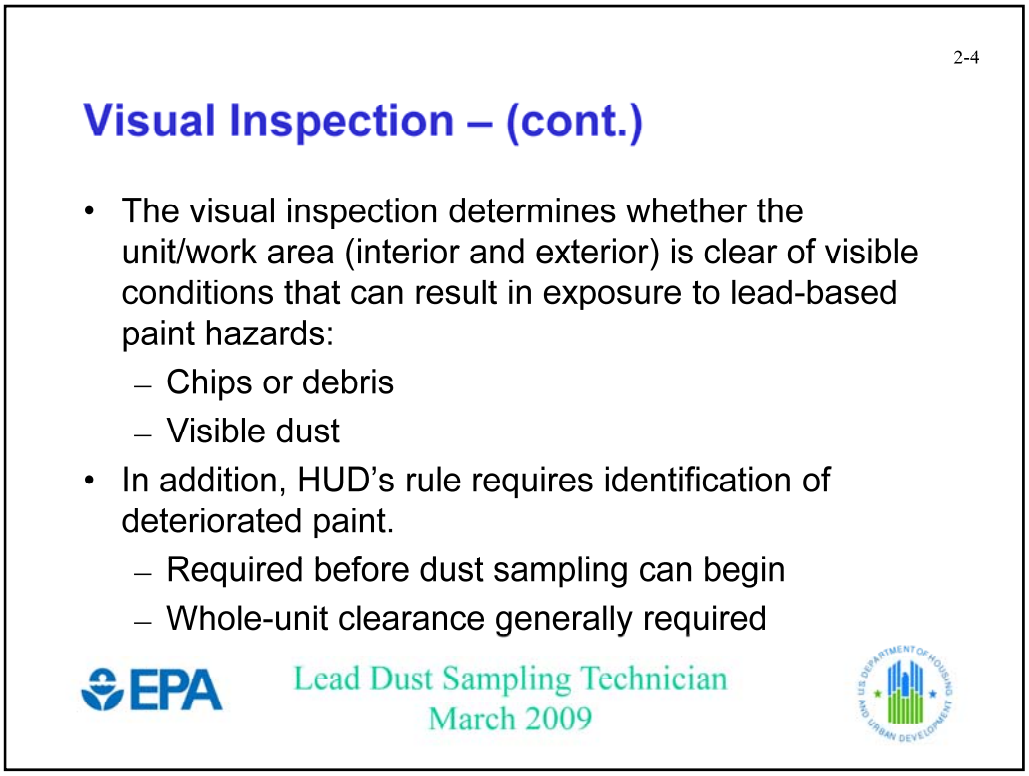
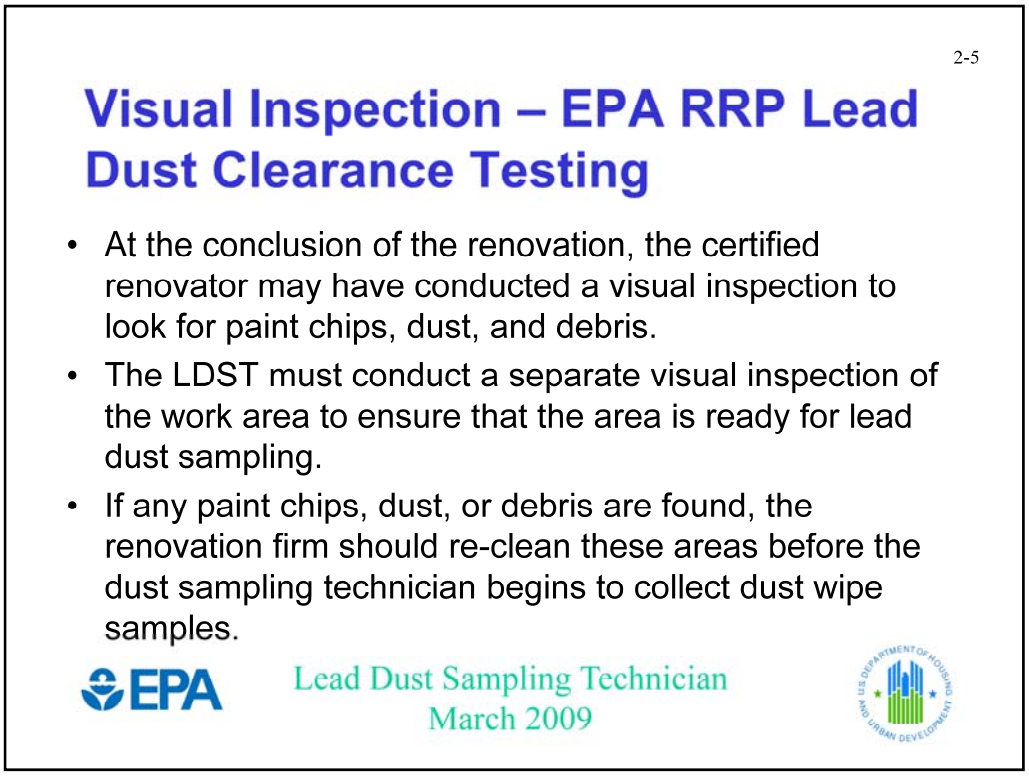
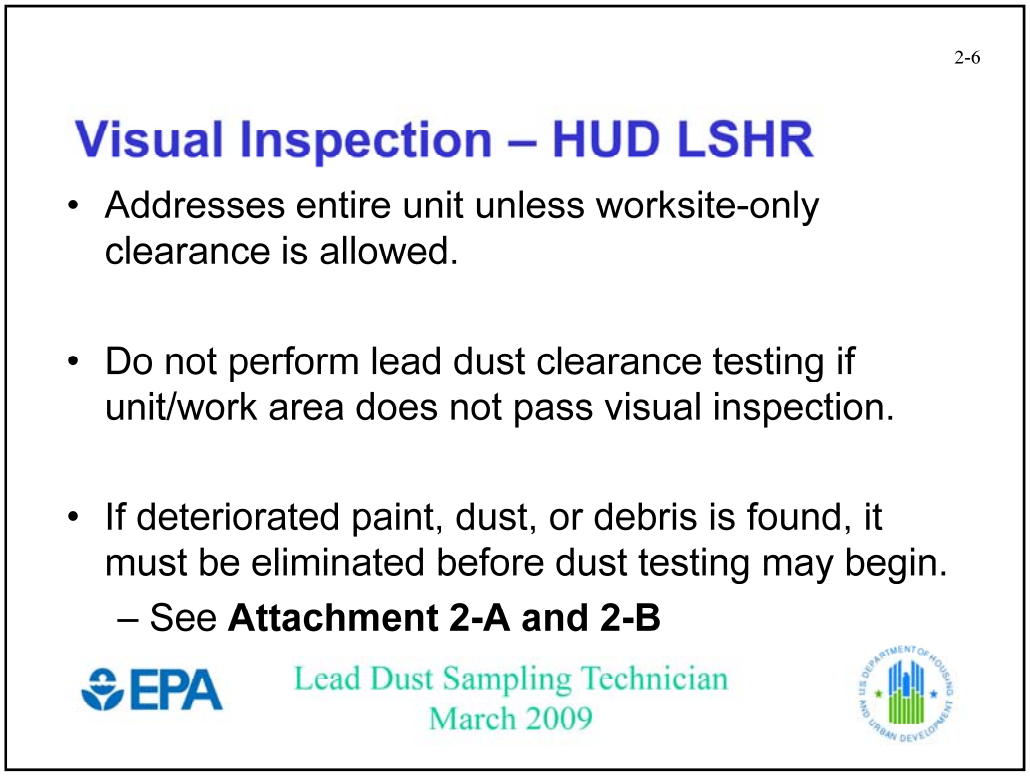


The visual inspection determines whether the unit/work area is clear of conditions that can result in exposure to lead-based paint hazards, such as paint chips, debris, visible dust, and deteriorated paint. If these conditions are present, the unit does not meet EPA's and HUD's rules for lead dust clearance testing. HUD generally requires visual inspection and clearance of an entire unit, with worksite-only clearance allowable under certain conditions.



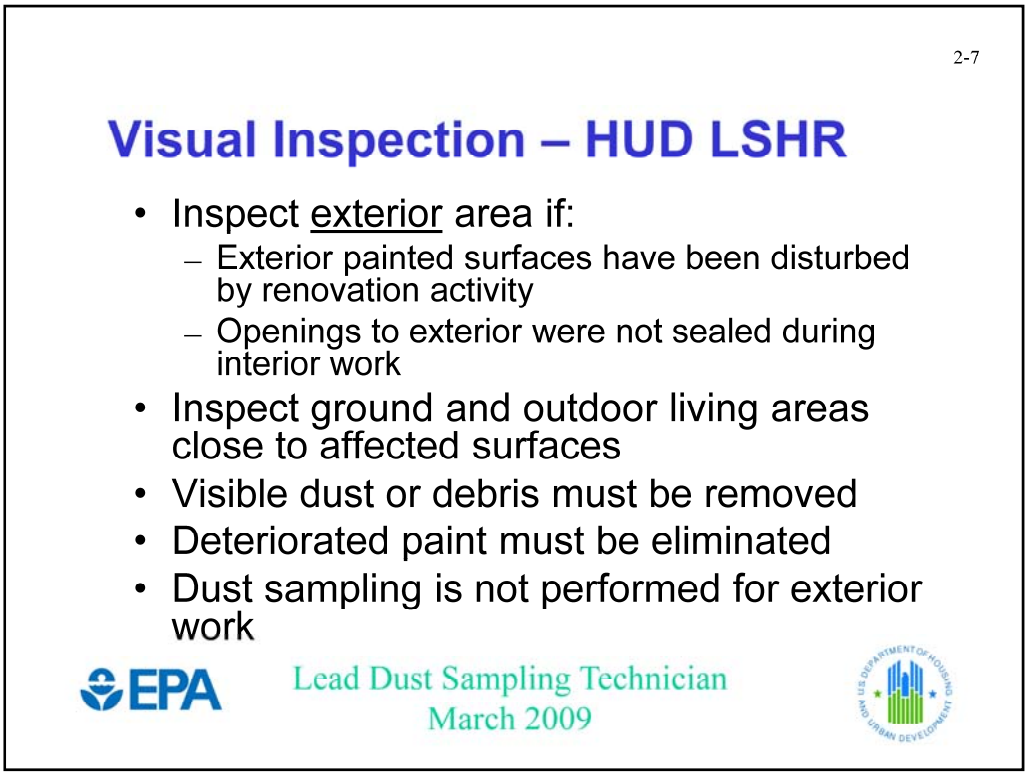
It is important for the lead dust sampling technician to understand that the renovation firm may perform his or her own preliminary visual inspection. The lead dust sampling technician should also perform a visual inspection of the work area. If the lead dust sampling technician observes paint chips, dust, or debris in the work area, these conditions must be brought to the attention of the certified renovator for re-cleaning.



Why look for deteriorated paint?

In order to address lead dust in a housing unit, you need to address its sources, including deteriorated lead-based paint. If paint contains lead, deteriorated paint can create chips and dust, which can cause exposure to lead.

* NOTE: The LSHR refers to this process as a "visual assessment," but for purposes of this curriculum, the term "visual inspection" is used.



EXTERIOR VISUAL INSPECTION IS NOT REQUIRED IF ONLY INTERIOR WORK IS PERFORMED.

An independent third party is needed to do an exterior visual inspection if the exterior work was done under HUD's LSHR. A certified dust sampling technician is qualified to perform this inspection.

For more information, see **Appendix B** or 24 CFR 35.1340.

HUD Note: HUD requires sampling technicians to verify with renovator that openings to the exterior are closed during interior work. If not closed, exterior visual inspection is required for interior work.

Dust sampling is not required for exterior work. There are no dust-lead clearance standards for porches, balconies, railings, or other horizontal exterior features.

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Exterior Debris

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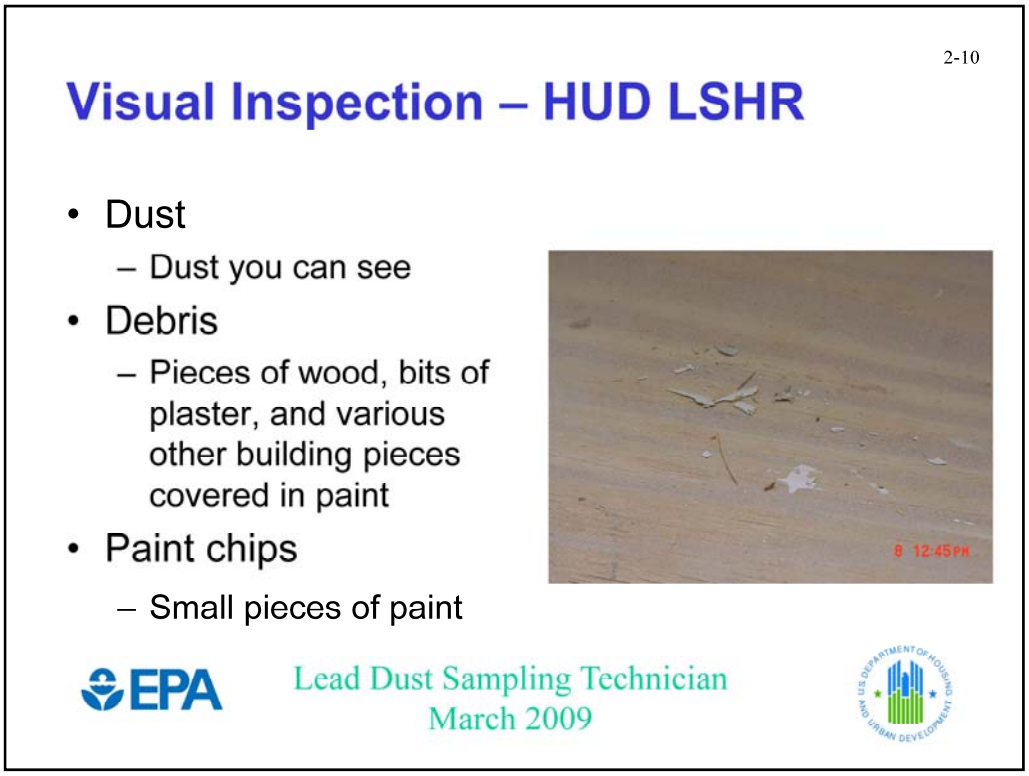
Deteriorated paint is any paint that is not intact. It does not have to be peeling paint. As seen in the following photographs, deteriorated paint can include:

- Chipping paint on door and window trim
- Peeling paint and flaking paint on walls and window sashes
- Paint with small bubbles that look like blisters
- Paint with lines and cracks that make it easy to peel the paint away
- Paint that is “chalking” or creating chalk-like dust

Note: Hairline cracks and nail holes are not considered deteriorated paint.



What do visible dust, paint chips, and debris look like?

• Visible dust is dust you can see.

• Debris can be pieces of wood, bits of plaster, and various other building pieces covered with paint that are left in the room or near where the work was done.

• Paint chips are little pieces of paint. Chips can be even smaller than your fingernail or larger than your hand. Look for paint chips on floors and windows.

Visual Inspection – HUD LSHR

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Chipping Paint

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Visual Inspection – HUD LSHR

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Holes in wall

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Visual Inspection – HUD LSHR

2-13

Deteriorated Paint

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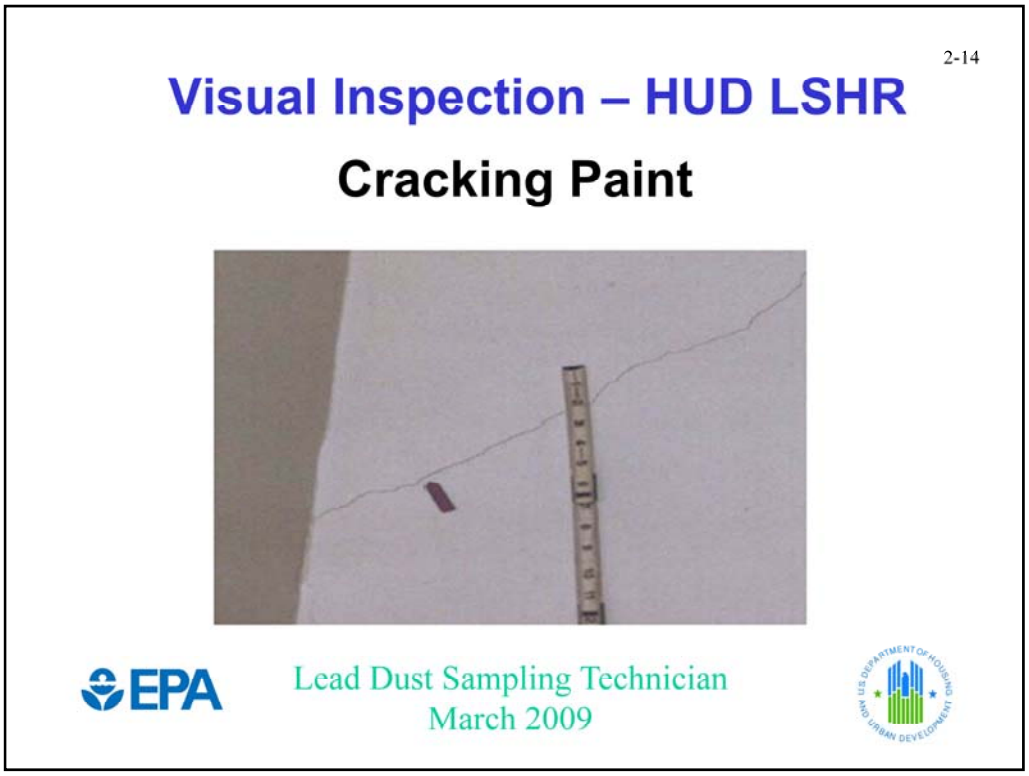
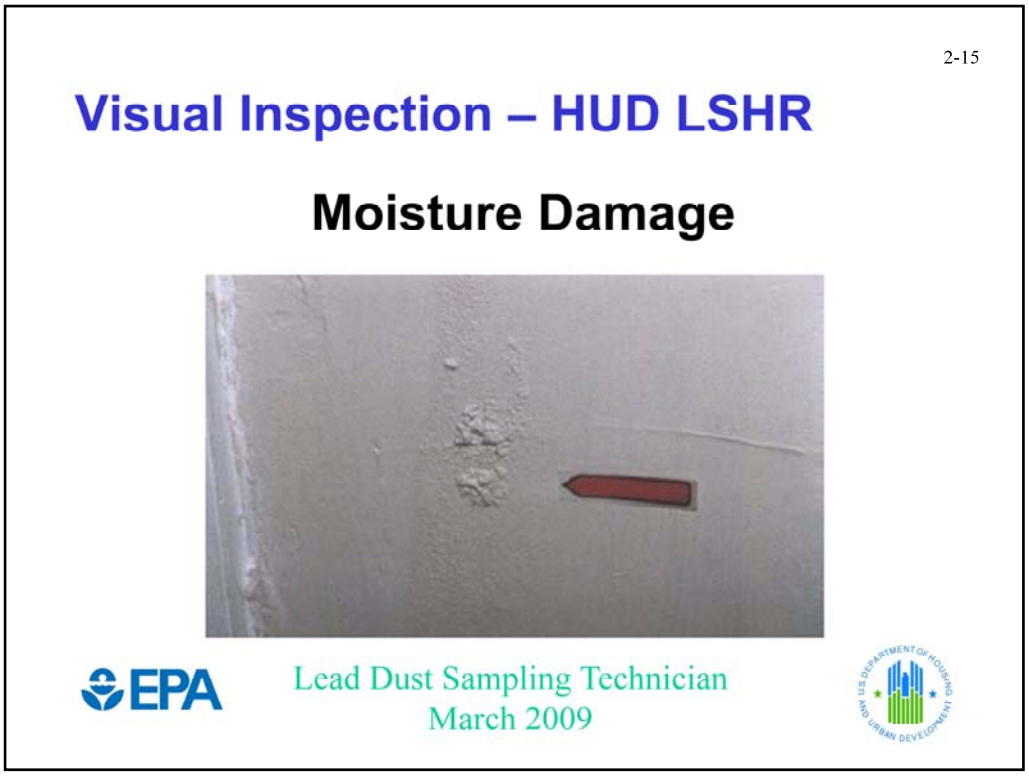


The arrow here points to a crack in the paint.



Moisture can be the cause of many paint problems. In this case, it is causing the paint to bubble.

2-16

Visual Inspection – HUD LSHR

Friction Damage

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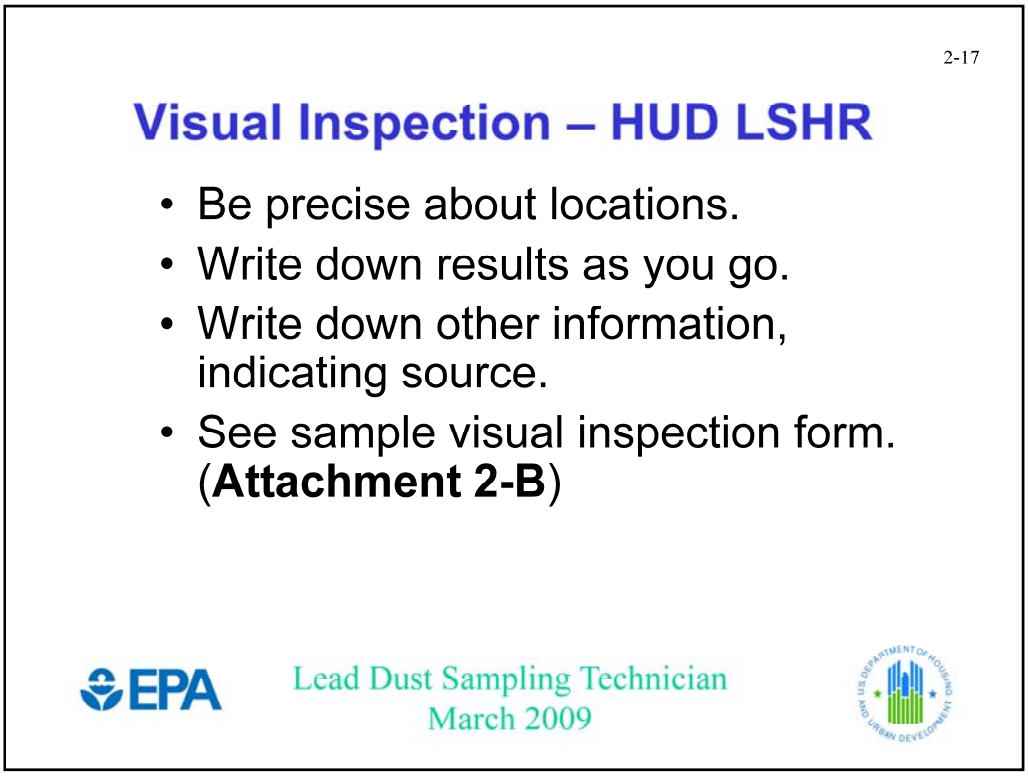
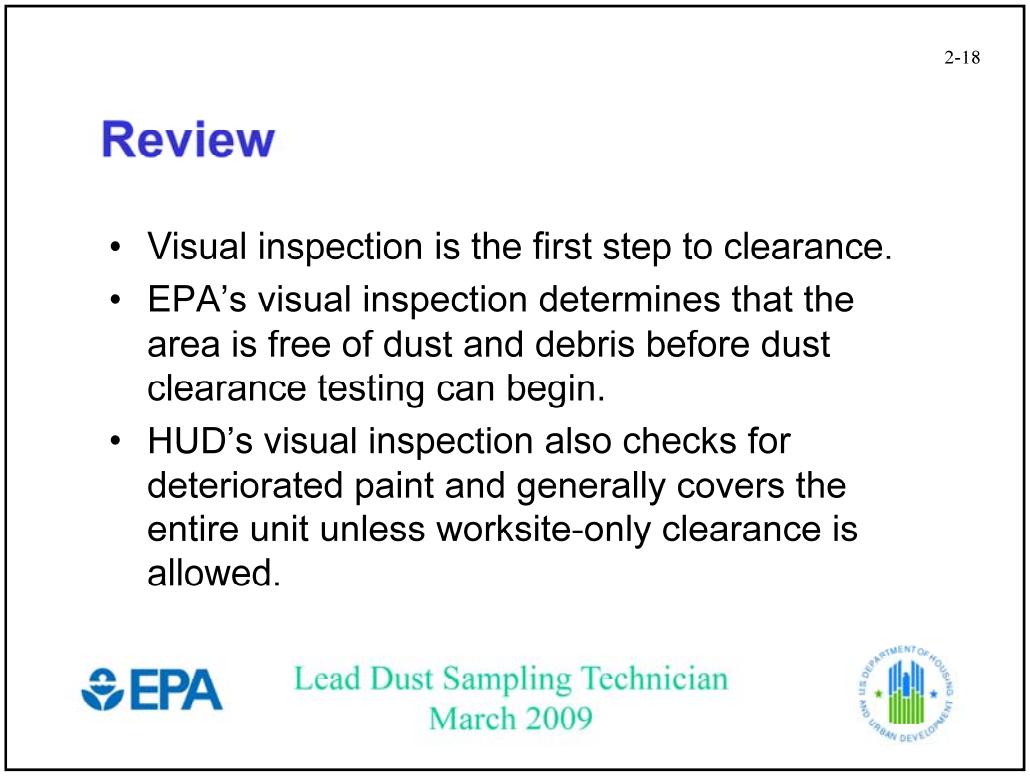


When recording the results of a visual inspection, take the following steps:

- Be precise about locations (e.g., room descriptions and/or specific areas in room) where visible dust, debris, paint chips, and deteriorated paint were found.
- Write down results as you go along.
- Write down other information the client provides about the surface in question.

See Completed Sample Visual Inspection Form in **Attachment 2-B.**



- See **Slides 2-3 through 2-16** for information and answers.
- See **Slide 2-3** for information and answers.
- See **Slides 2-3 through 2-9** for information and answers.

2-19

Review – (cont.)

- Visual inspection as part of clearance is the responsibility of the dust sampling technician.
- Be methodical in your visual inspection, and record results.

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Attachment 2-A: Sample Visual Inspection Form

SAMPLE VISUAL INSPECTION FORM

Date and Time of Clearance	
Lead Dust Sampling Technician	
Client	
Property Address	

Location	Identify visible areas of dust, paint chips, painted debris, and deteriorated paint. *(Note location: walls, ceiling, floors, doors, windows, trim, cabinets, approximate square footage, etc.)*

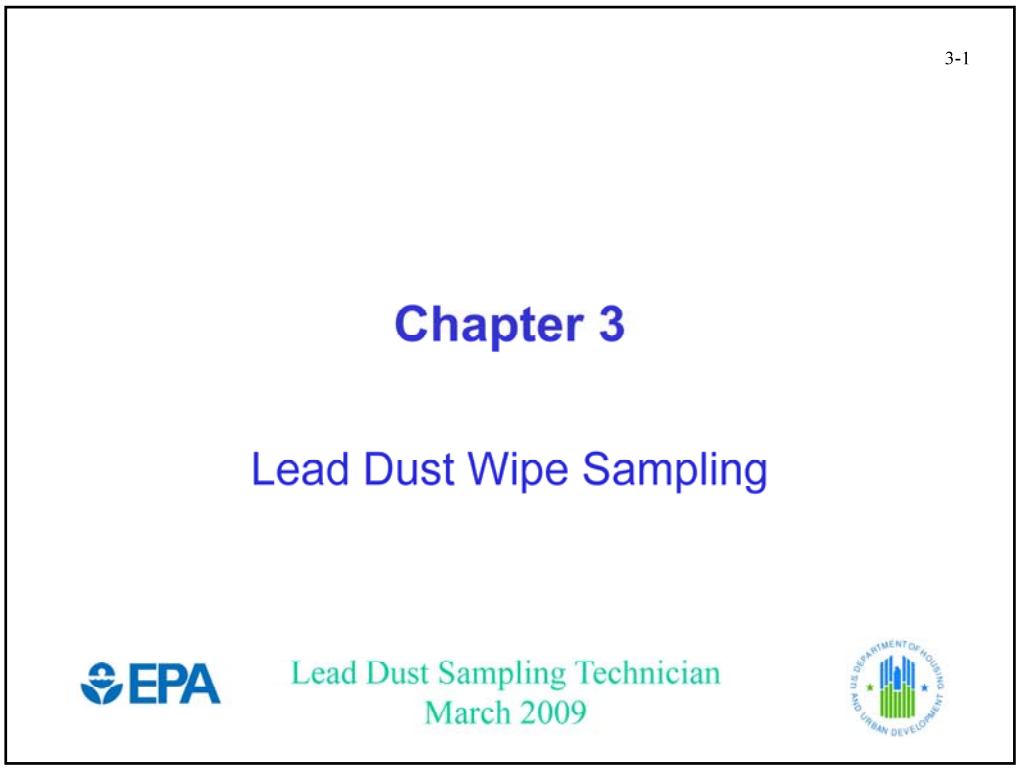
Attachment 2-B: Completed Sample Visual Inspection Form

SAMPLE VISUAL INSPECTION FORM

Date and Time of Clearance	*8/5/09 11:00AM*
Lead Dust Sampling Technician	*Jane White*
Client	*The Smith Family*
Property Address	*78 East Main Street* *Hammond, IN 89898*

Location	Identify visible areas of dust, paint chips, painted debris, and deteriorated paint. *(Note location: walls, ceiling, floors, doors, windows, trim, cabinets, approximate square footage, etc.)*
Entry Area	
Living Room	
Dining Room	
Kitchen	*Window above sink; deteriorated paint on window sash. Client said deteriorated paint was tested and is not lead-based paint.*
Common Area	
Bedroom #1 *Small bedroom (Street Side)*	*East window; deteriorated paint on lower sash and dust and paint chips in trough. Client said deteriorated paint was tested and is not lead-based paint.*
Bedroom #2 *Small bedroom (Back of the house)*	*Dust and paint chips on floor.*
Bath #1	
Exterior	

Chapter 3: Lead Dust Wipe Sampling


3-1
Chapter 3
Lead Dust Wipe Sampling
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3-2

Objectives

- Learn when and where to take a dust wipe sample
- Learn how to take a dust wipe sample
- Sample 3 surfaces where dust is collected
- Learn the difference between single-surface and composite sampling

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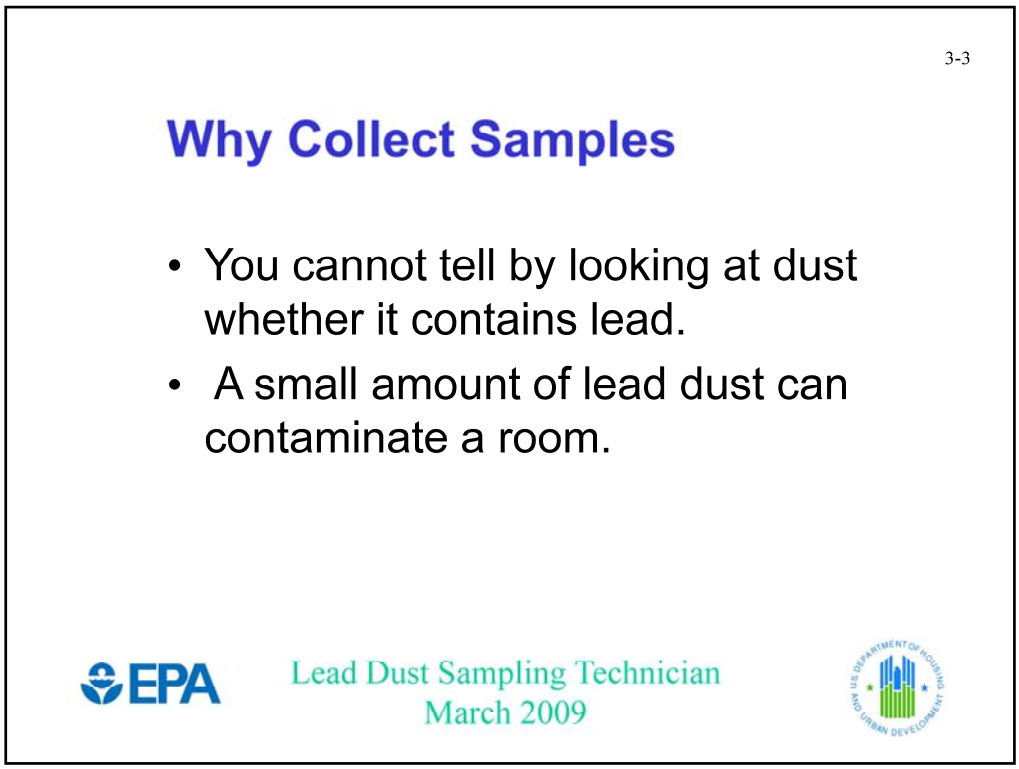
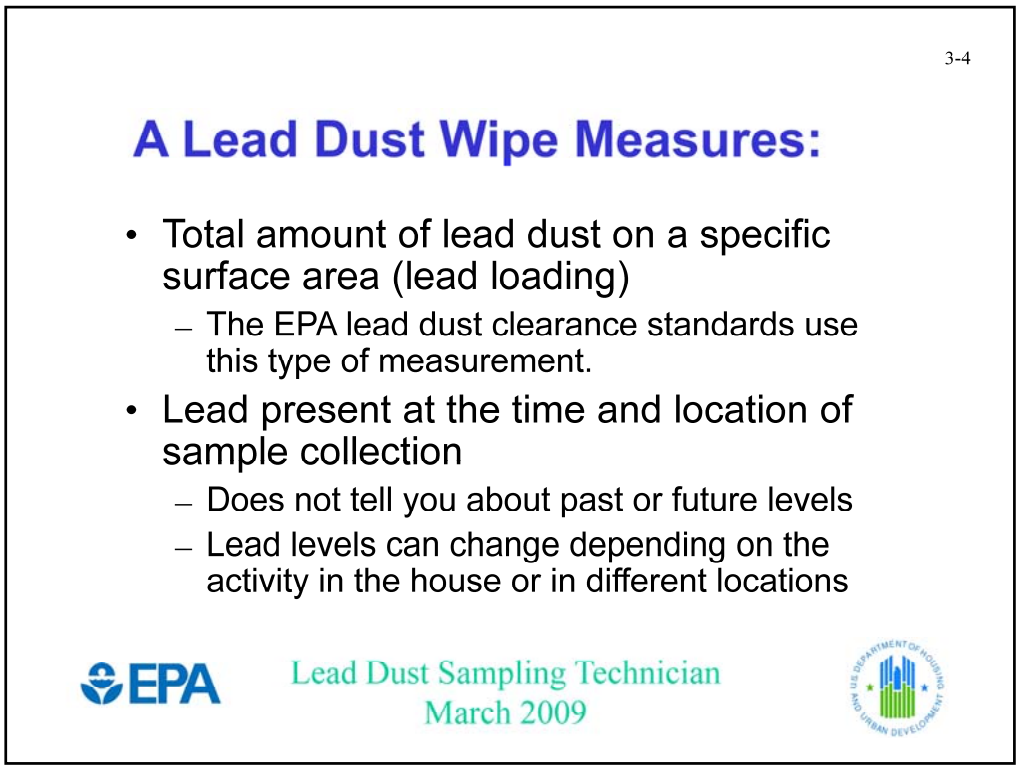


Why collect samples?

- Not all dust contains lead.
- You cannot tell by looking whether dust is contaminated with lead. A laboratory test is needed.

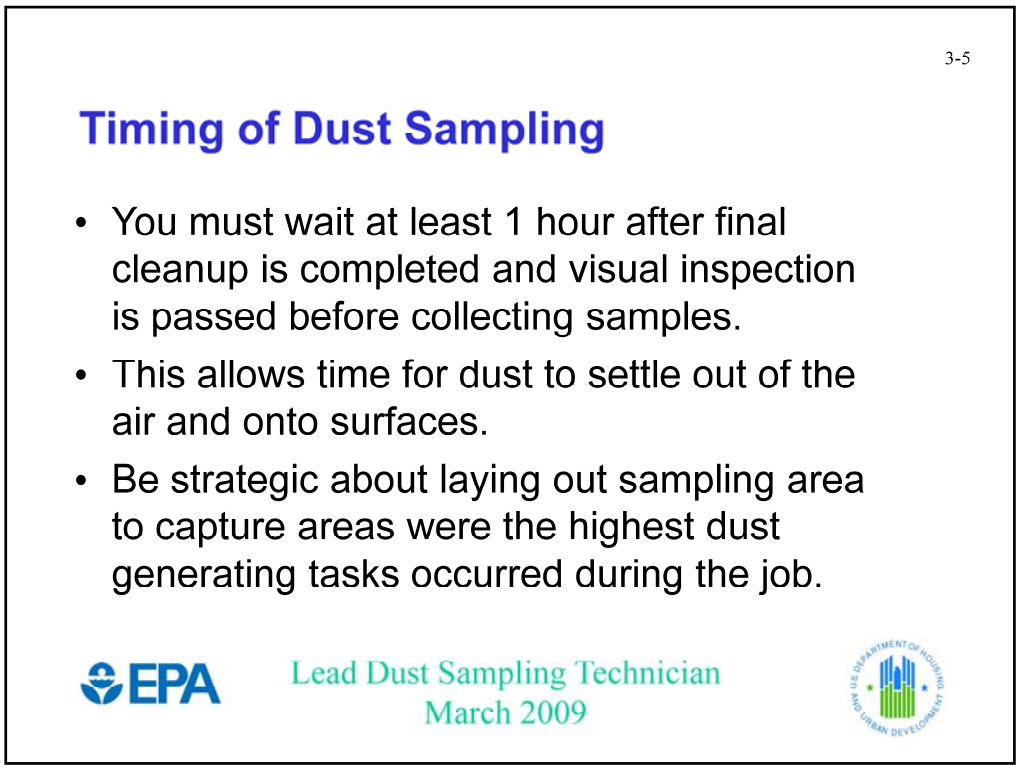
Activity: Lead Dust Contamination Demonstration

It only takes a little lead to contaminate a room. For example, imagine that each granule of artificial sweetener in a sweetener packet represents a tiny piece of lead. If only two or three of these "lead" granules were placed in a 1 square-foot area of floor, enough lead would be present to exceed the EPA clearance standard for lead dust. An individual granule is very small and would be nearly impossible to find by simply looking at an area, especially if the granule was ground up into smaller particles and spread throughout the area.

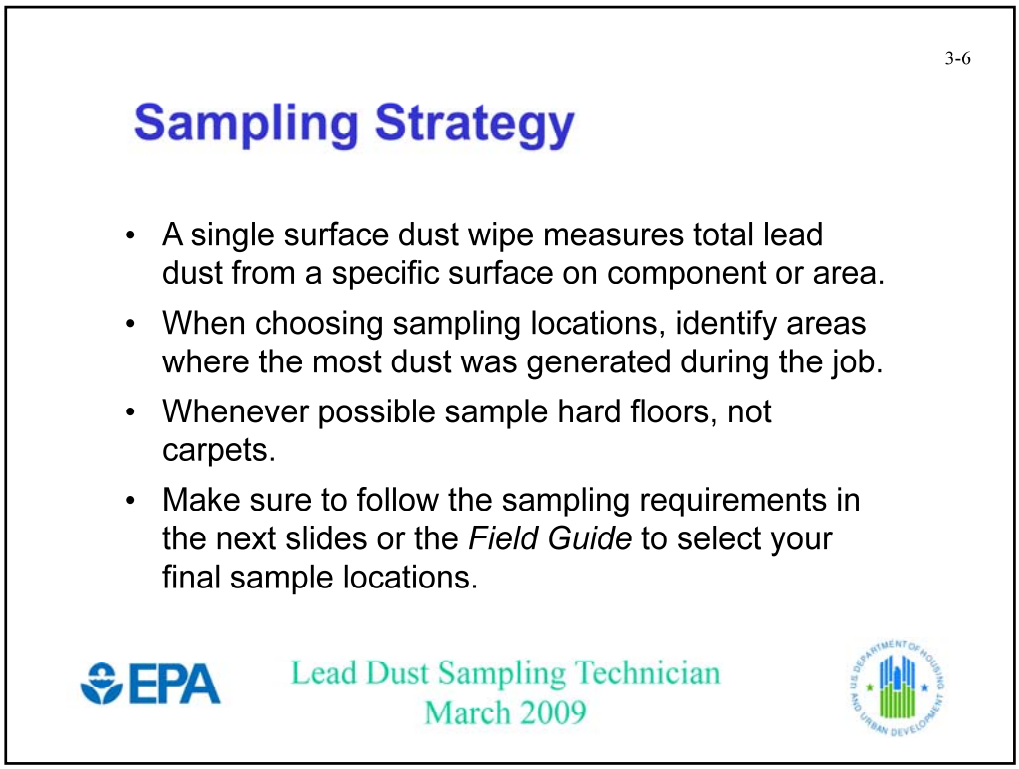


A dust wipe measures the total amount of lead dust on a specific surface area. This measurement is called lead "loading." Lead loading is a good indicator of the amount of lead to which a child is exposed.

- Dust wipes measure lead dust at a particular point in time.
- Lead levels can change as the amount of lead dust on the surface changes.
- Lead levels also can change depending on the activity in the house, including activities that disturb lead-based paint and the frequency of cleaning.
- The measurement tells you how much lead existed when the sample was collected; it does not tell you about past or likely future lead levels.



You must wait a minimum of 1 hour after the final cleanup is completed before collecting dust wipe samples. This allows time for the dust to settle out of the air and onto surfaces.



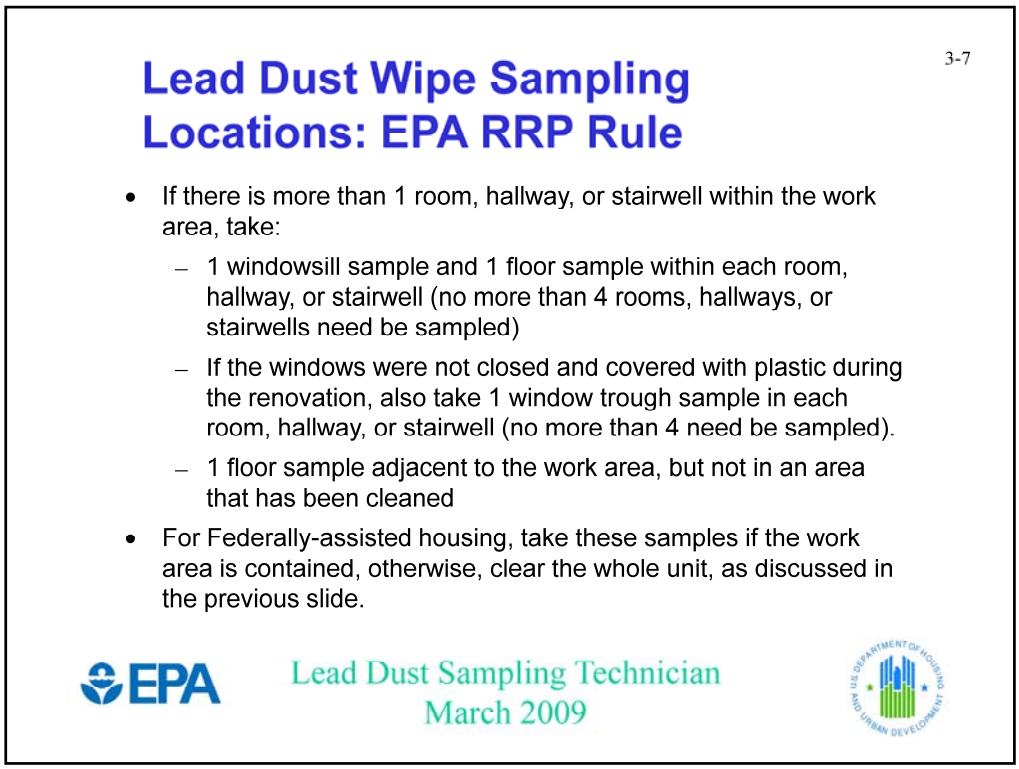
- Single-surface dust wipe samples contain one wipe from one surface.

– They measure lead dust from a specific surface, such as a floor or an interior windowsill.

– They measure the total lead in the surface area.

– They do not tell you about dust lead levels in other places on the same surface. Dust lead levels can vary substantially.

When planning a sampling strategy, consider your sample numbering scheme and prepare for the number of samples you expect to take. Try to capture the sampling locations near dust-generating tasks that occurred during the job.



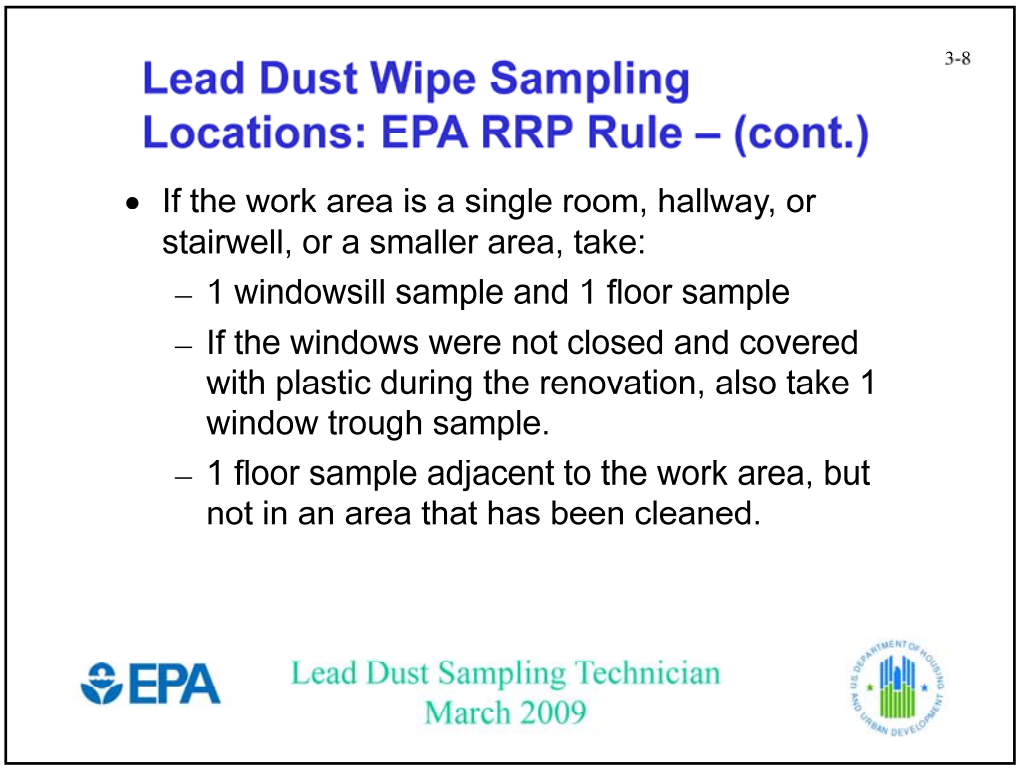
Although cleaning verification is not performed on carpeted floors, dust clearance sampling is. LDSTs should not avoid sampling carpeted floors.

If the work area includes more than 4 rooms, hallways, or stairwells, only 4 must be sampled. A windowsill sample and a floor sample must be collected from each of 4 rooms, hallways, or stairways within the work area.

The RRP Rule requires all objects and surfaces, including floors, within 2 feet of the work area to be cleaned after the work has been completed. Floor samples required to be collected outside of the work area must be collected outside of the cleaned area surrounding the work area.

Window troughs may contain pre-existing dust lead hazards. If possible, LDSTs should discuss the window trough sampling requirements with the certified renovator before the renovation begins. If the windows in the work area remain closed and covered with plastic during the renovation, window trough sampling will not be necessary.

The next few slides on sampling apply to HUD as well.


3-8
Lead Dust Wipe Sampling Locations: EPA RRP Rule – (cont.)
• If the work area is a single room, hallway, or stairwell, or a smaller area, take:
– 1 windowsill sample and 1 floor sample
– If the windows were not closed and covered with plastic during the renovation, also take 1 window trough sample.
– 1 floor sample adjacent to the work area, but not in an area that has been cleaned.
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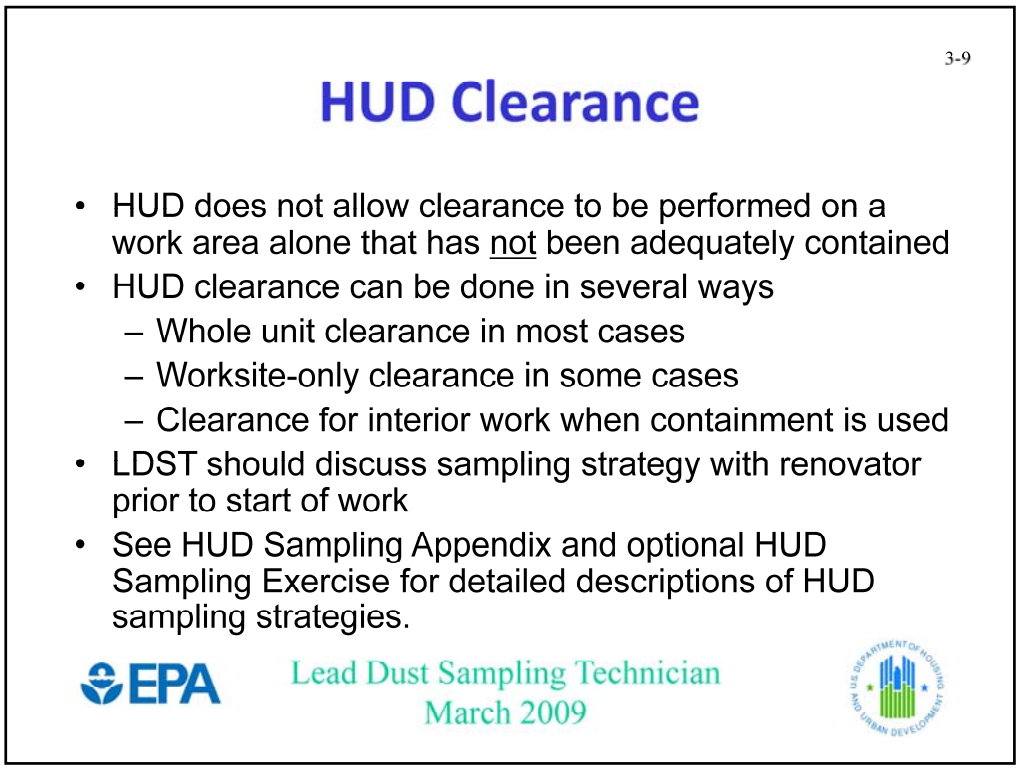
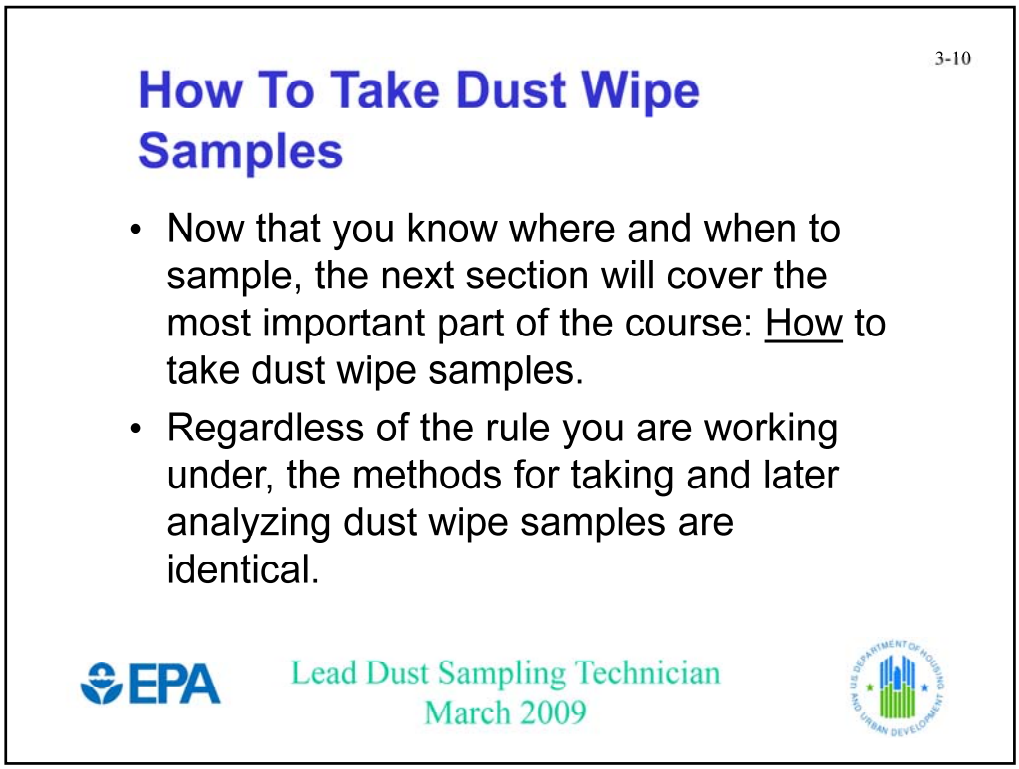


HUD has different requirements than EPA for clearance. Although EPA's post-renovation clearance protocol is similar to HUD's allowed protocol for worksite-only clearance, HUD has additional requirements to use this sampling strategy. Although the sampling requirements are very important for Federally-funded renovation activity, these units will represent a relatively small percentage of all renovation projects performed nationwide. Because most of the renovation jobs that are expected to occur in U.S. housing will not be funded with Federal housing assistance, details on HUD sampling are provided attached to the curriculum in the optional sampling exercise for HUD-assisted work and in the HUD sampling appendix. All LDSTs should discuss sampling plans with the renovator before work begins; with particular attention to whether the project is receiving Federal housing assistance, so the proper sampling strategy can be used to comply with the Lead Safe Housing Rule.


3-10
How To Take Dust Wipe Samples
• Now that you know where and when to sample, the next section will cover the most important part of the course: How to take dust wipe samples.
• Regardless of the rule you are working under, the methods for taking and later analyzing dust wipe samples are identical.
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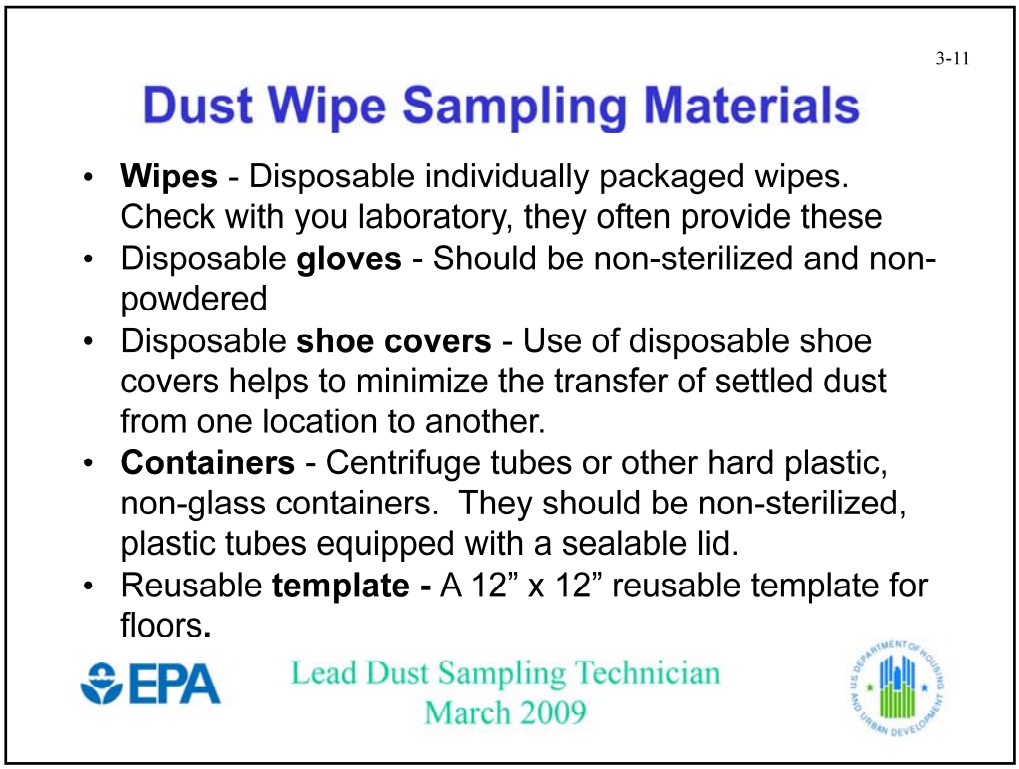
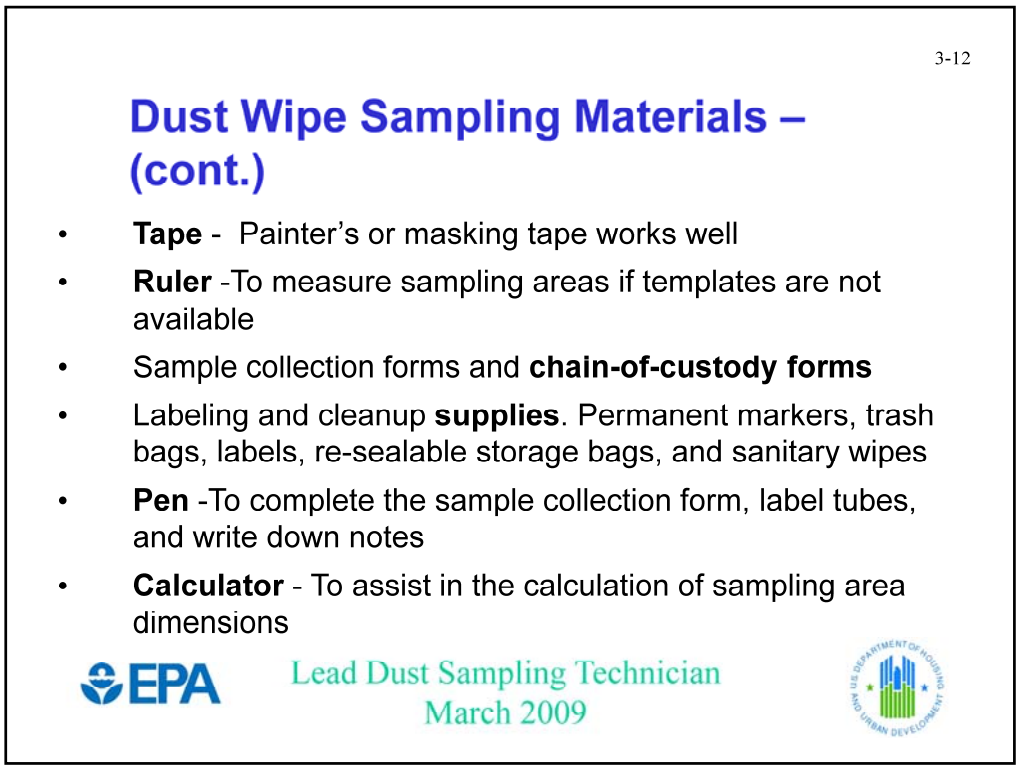
March 2009



Key supplies are listed above. Check with your analytical lab, because they will often provide some of these materials.

- **Disposable lead dust wipes.** Use individually packaged wipes (laboratories often provide these). The wipes should meet ASTM Standard E1792-03. Do not use any wipes that contain aloe or lanolin.
- **Disposable gloves.** Gloves should be disposable. Non-sterilized and non-powdered gloves are recommended because powder on gloves may contaminate the sample (laboratories often provide them).
- **Disposable shoe covers.** Use of disposable shoe covers between buildings and the removal of shoe covers before entering your vehicle can be helpful in minimizing the inadvertent transfer of settled dust from one location to another.
- **Centrifuge tubes or other hard plastic, non-glass container.** They should be non-sterilized, plastic tubes equipped with a sealable lid.
- **Reusable templates.** A 12”x12” reusable plastic or disposable cardboard template is best.



Key supplies are listed above. Check with your analytical lab, because they will often provide some of these materials.

Tape. Painter's or masking tape works well. Tape is used to secure templates while taking dust samples and to outline sample areas when templates are not available.

Ruler. To measure sampling areas if templates are not available.

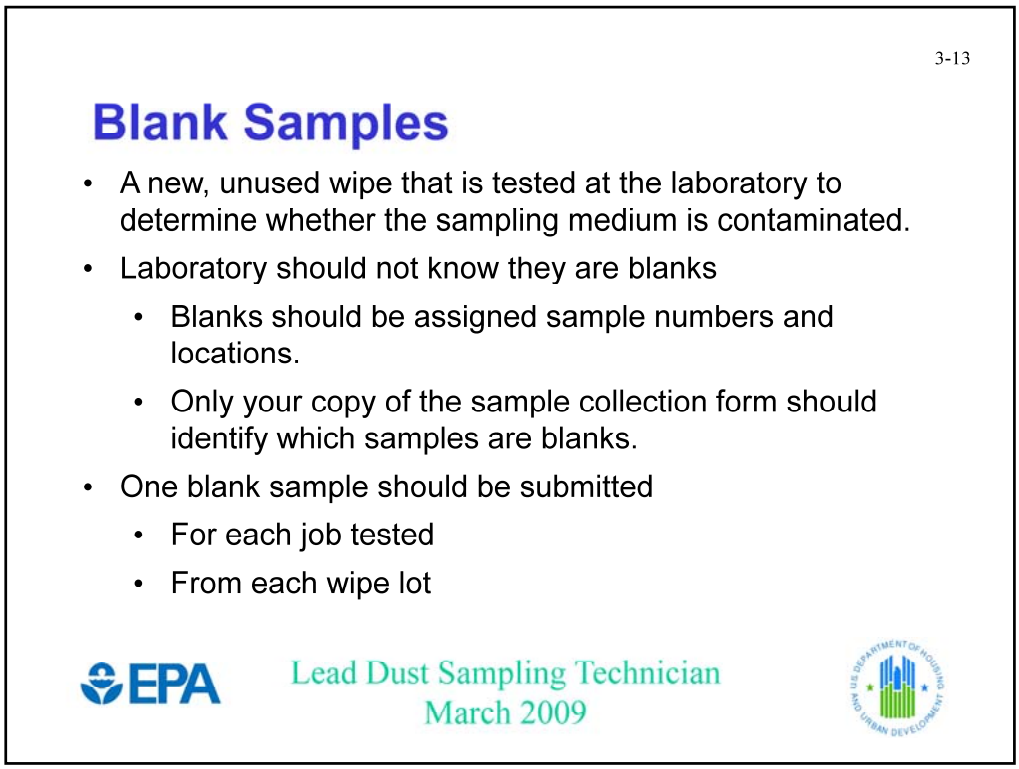
Sample collection forms and chain-of-custody forms. Laboratories will generally provide their own forms.

Labeling and cleanup supplies. Permanent markers, trash bags, labels, re-sealable storage bags, and sanitary wipes for face and hands if no access to warm and soapy water.

Pen. A pen should be used to complete the sample collection form, label tubes, and write down notes.

Calculator. A calculator should be used to assist in the calculation of sampling area dimensions.

Sanitary Wipes. To be used for cleanup if no access to warm, soapy water.



Blank samples are new, unused wipes that are sent to the laboratory to determine whether the sampling media are contaminated by providing a "clean" (assumed lead-free) wipe for comparison. Because you should prepare blank samples on every job, you should factor the costs associated with these samples into your fee. Submitting blank samples is important to test the accuracy of your sampling techniques, the sampling media, and the laboratory's analysis.

Preparing blank samples. You should prepare blank samples in the same manner as other dust wipes.

- Prepare blank samples at the end of a job – after collecting all of your dust wipe samples.
- Remove a new wipe from the container with a new glove, shake the wipe open, and refold it as you would if you were taking a dust sample.
- Insert the unused wipe into a sampling container without touching any surfaces.

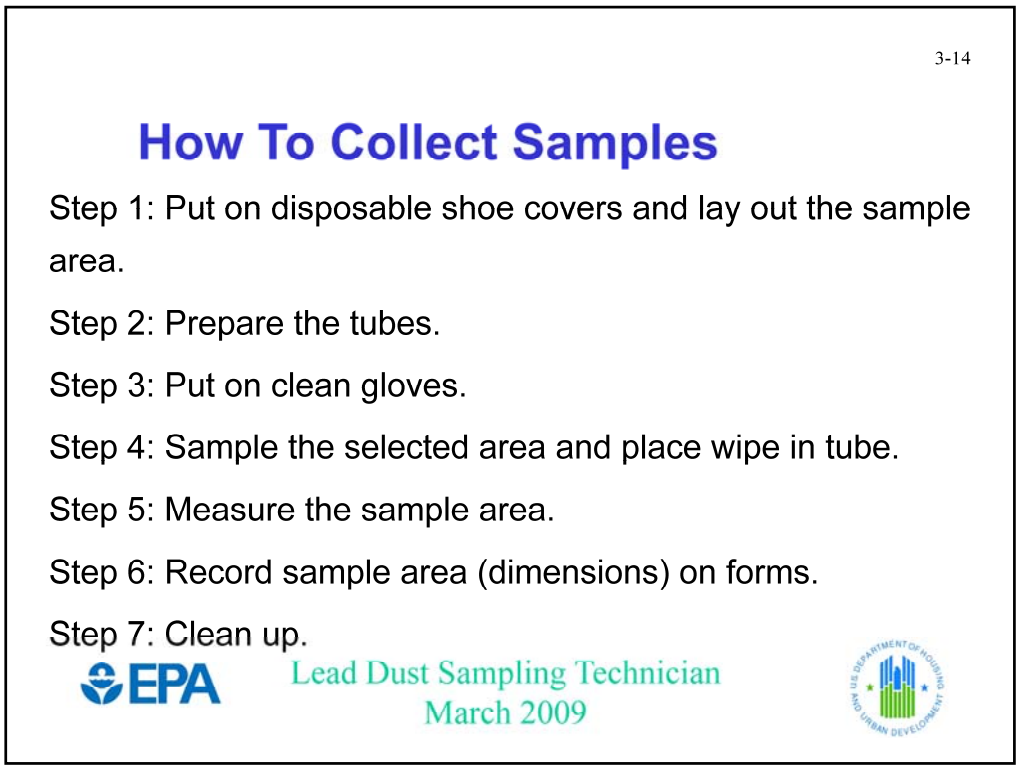
Labeling and submitting blank samples. Blank samples should be labeled so you can identify them, but the lab cannot. Do not label blank samples as "blank."

- Give the sample a fictitious number that looks like your other sample numbers and provide a fictitious sample location and measurements to the lab.
- Keep notes in your records identifying the blank sample number.
- Submit one blank sample for each unit sampled. Additionally, one blank should be included from each wipe lot used to ensure that the lots are not contaminated. The wipe lot number is usually found on the bottom of the wipe container.
- It is improper to label blanks as such because of the unavoidable potential for biasing the laboratory analysts; it is poor practice to have all blanks at the same portion of each unit's (and each wipe lot's) samples.

Interpreting blank samples. If the laboratory detects more than 10 µg/wipe, one of three errors may have occurred:

- The dust wipes were contaminated before you began using them;
- You contaminated the wipes during your sampling; or
- The laboratory contaminated them during the analysis.

If the blank sample is contaminated, then the data should not be used and the unit in question should be re-sampled.



This slide presents an overview of the dust sample collection process, which has seven key steps. Each of these steps is presented here and in more detail later in this training.

Step 1: Put on disposable shoe covers and lay out the sample area. Carefully outline the area you will sample using a template or tape.

Step 2: Prepare the tubes. Label the tubes and place partially opened tubes near the spot you will sample.

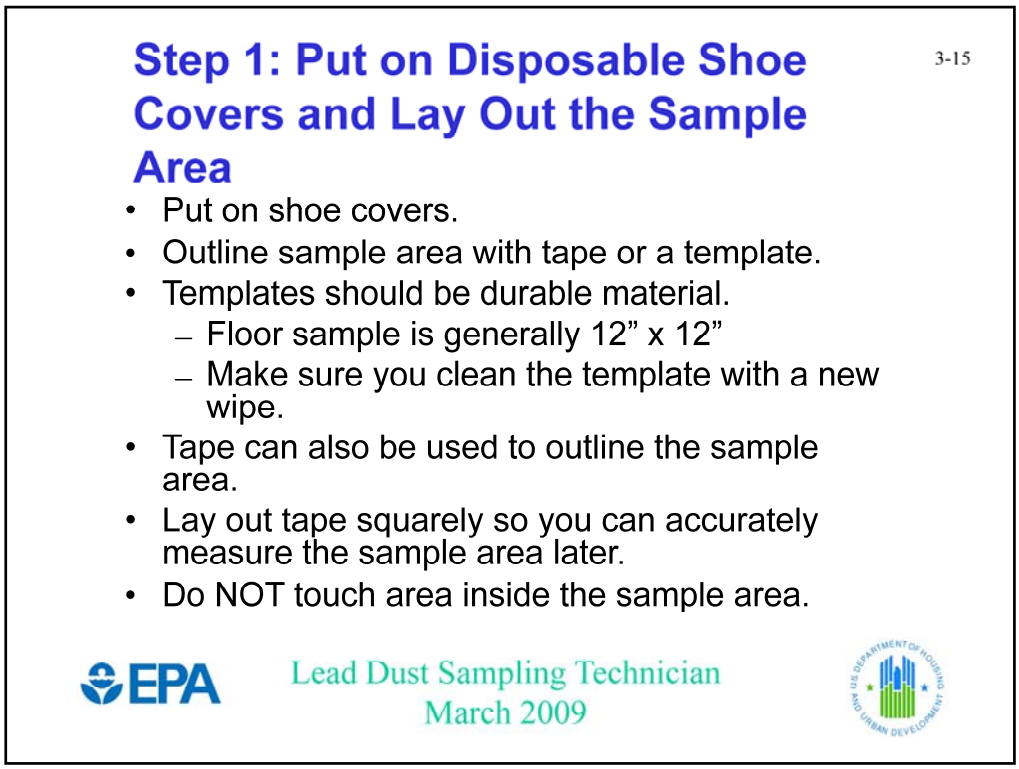
Step 3: Put on clean gloves. Put on clean gloves before collecting each sample. This helps minimize contamination.

Step 4: Wipe sample area. Wipe the entire area you laid out with disposable wipe for the sample. Fold the wipe and place it in the appropriate tube.

Step 5: Measure the sample area. Measure the area sampled.

Step 6: Record sample area on forms. Record measurement on sample collection form and chain-of-custody form.

Step 7: Clean up. Sampling materials must be cleaned or removed from the site because they may be contaminated.



Step 1: Put on Disposable Shoe Covers and Lay Out the Sample Area

The following describes how to lay out the sample area using a template. Whenever possible, use a template to avoid measurement errors. **(*Make sure you clean the template before following sampling protocol.)**

The templates will vary in their dimensions:

- The floor template should have a 144-square inch or 1-square foot opening (12 inches = 1 foot) or an alternative area that has accurately known dimensions. A square foot is the basic measurement used by EPA-recommended guidance for lead dust clearance testing.
- The interior windowsill or window trough template should have an opening of at least 16 square inches (approximately 2” x 8”). Interior sills can vary in width.
- Tape the template to the appropriate surface (floor, interior sill, or interior trough) using masking or painter’s tape. Be careful to avoid placing your hands in the sample area, as this might remove or add lead dust and give you a misleading result.
- If using tape, ensure that the tape is laid out squarely so that an accurate area can be determined for the sample size. It is very difficult to measure the area if the tape is not laid out in a square or rectangle.

Do not touch or otherwise disturb the area inside the measured sample area. This could remove or add lead dust and give you a misleading result. (You will measure the exact area of the sample area after collecting the dust sample.)

Here is an example of how the sampling area is laid out when you have a template. Note how it is taped to the floor.

***Be sure to clean reusable templates.** Tape corners at 45 degree angle away from the corner.

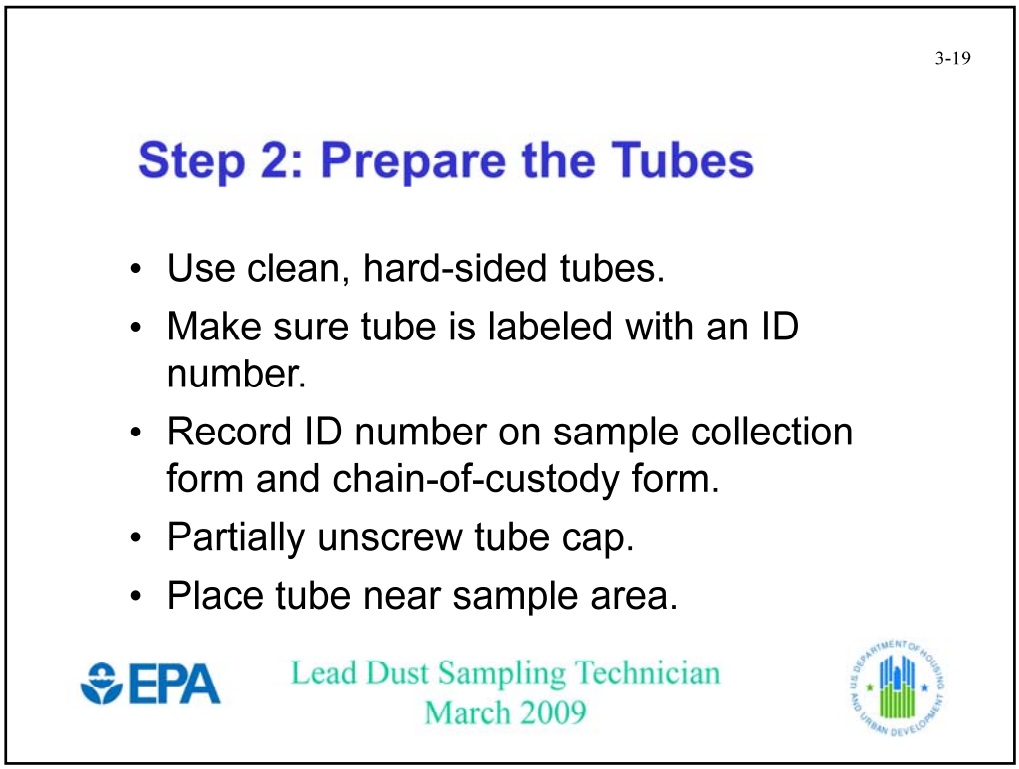
***Be sure not to touch the inside of the sample area.**

Here is an example of using tape to outline the sample area on a floor when a template is not available. Make sure that the tape is laid at right angle to ensure a that the area outlined as close to a perfect square as possible. Doing so will make measure the area of the sample much easier and more accurate.

If a template for a sill or trough is not available, lay out the sampling area with painter's tape. Place tape perpendicular to the edge of the sill or trough. The sample area will be calculated after taking the sample to avoid contaminating the area.

If the sill or trough is not taped, the width of the sample area varies from front-to-back when the ends of the sill or trough are not parallel straight lines, so the area of the sample will be difficult to determine.

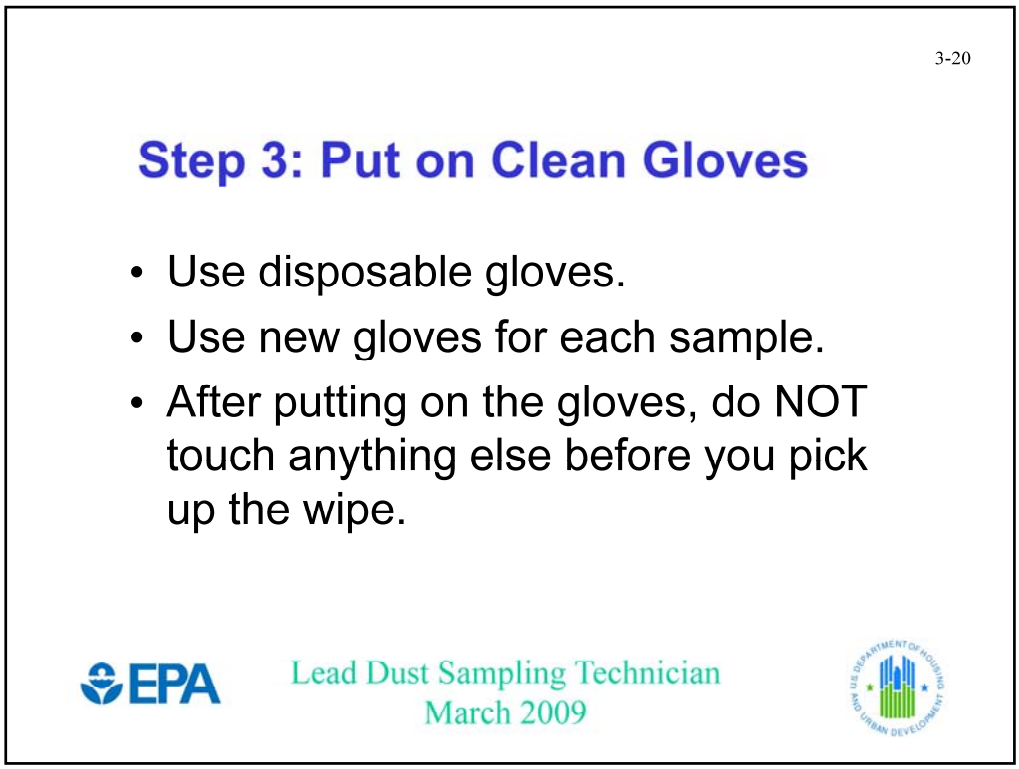
Make sure the area you are sampling is at least 16 square inches. Try to sample at least 8" of sill width.



Step 2: Prepare the Tubes

Tubes must be prepared so that they are properly labeled and are accessible to you when you are ready to put your samples in them.

- Label each tube with an identification number.
- Record the identification number on the sample collection form and chain-of-custody form.
- Partially unscrew the cap on the tube to be sure you can open it easily.
- Place the tube near the area you plan to sample. This avoids possible contamination of the wipe and loss of sampled dust between the time you collect the sample and place it in the tube.
- Organizing tubes in a portable test tube rack may be helpful.



Step 3: Put on Clean Gloves

Wearing clean gloves avoids transferring lead dust from your hands to the wipe.

- Use disposable gloves.
- Use new gloves for each sample collected.
- Do not put on the gloves until you are ready to take the sample. You can contaminate the gloves if you touch other surfaces, such as when measuring the sample area.
- After putting on the gloves, do NOT touch anything else before you pick up the wipe.

3-21

Step 4: Wipe Sample Areas

- The procedures for taking dust wipe samples from floors, windowsills, and troughs are listed on the following slides.
- The procedure for sampling floors is different than the procedure for sampling windowsills and troughs.
- Step 4 of lead dust wipe sampling is also described in the *Lead Dust Sampling Technician Field Guide.*

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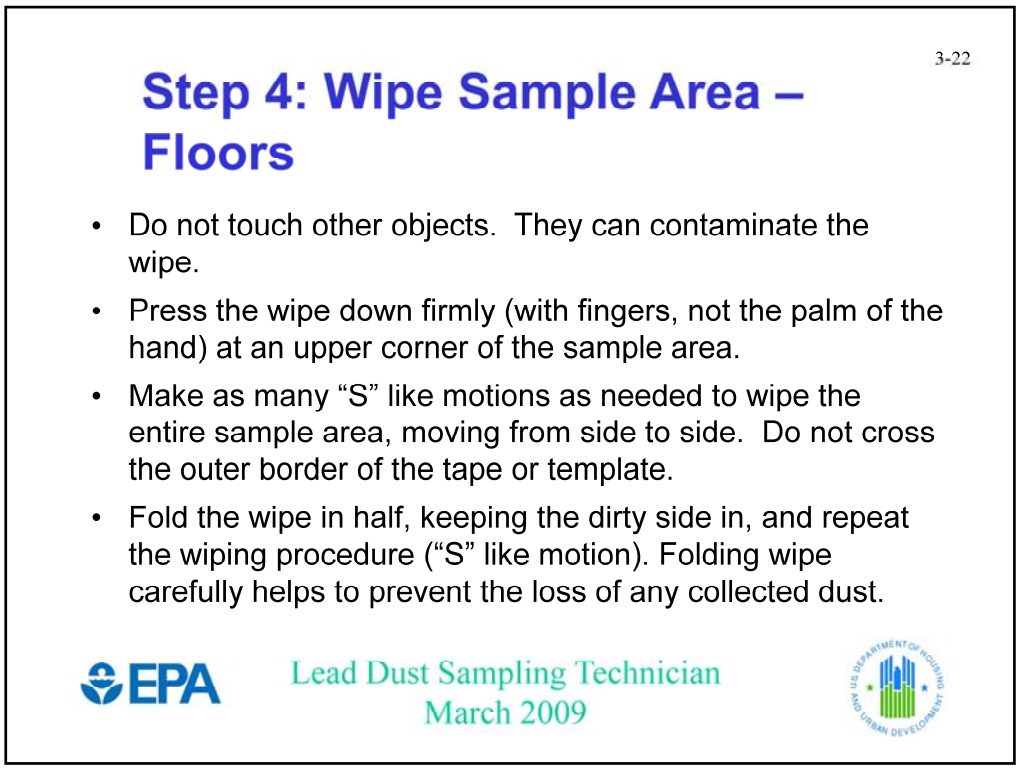
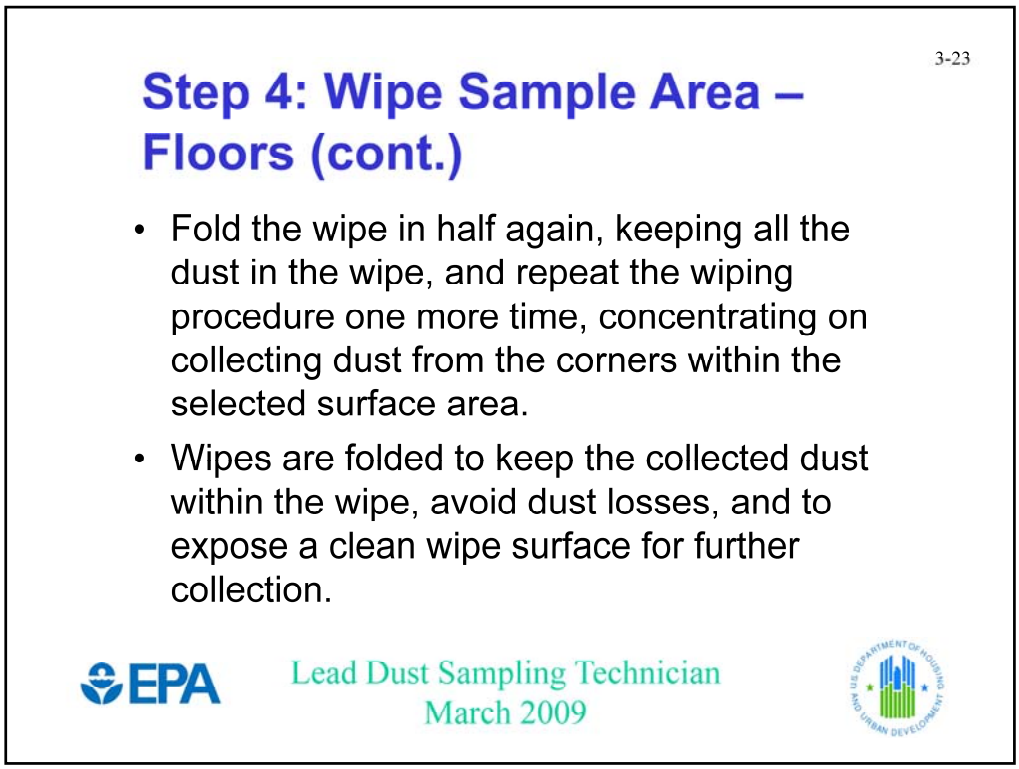


Step 4: Sampling Procedure for Floors

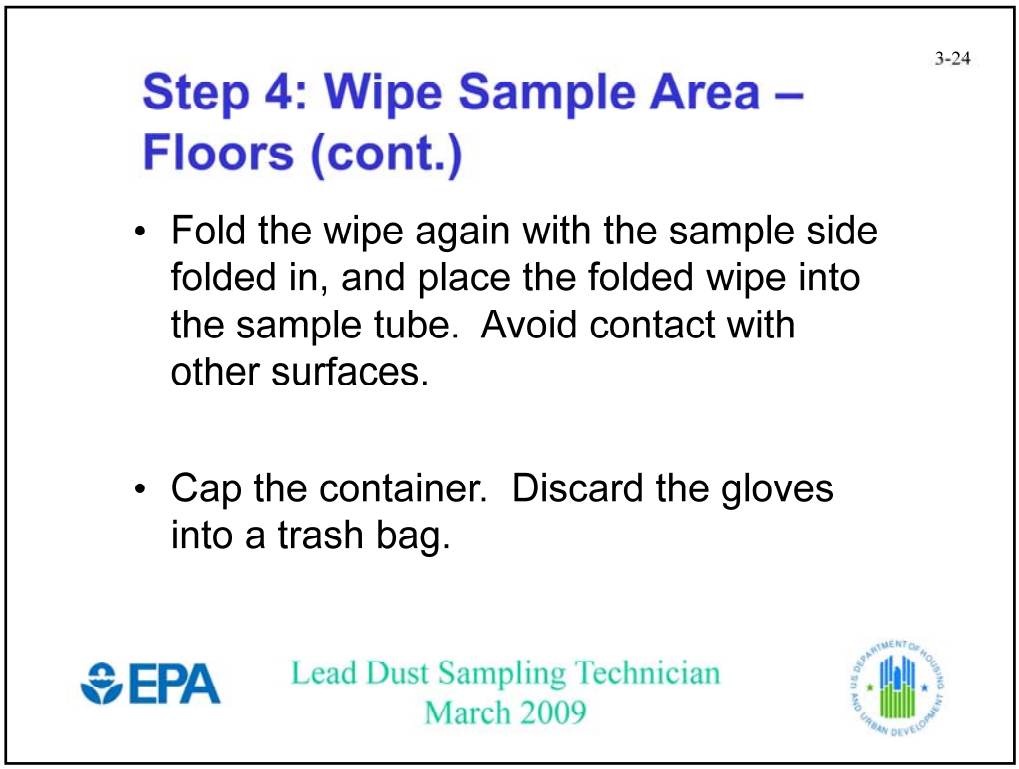
- Do not touch other objects. They can contaminate the wipe.
- Press the wipe down firmly (with fingers, not the palm of the hand) at an upper corner of the sample area.
- Make as many "S"-like motions as needed to wipe the entire sample area, moving from side to side. Do not cross the outer border of the tape or template.
- Fold the wipe in half, keeping the dirty side in, and repeat the wiping procedure ("S" motion). This helps to prevent the loss of any collected dust.



Step 4: Sampling Procedure for Floors

- Fold the wipe in half again, keeping all the dust in the wipe, and repeat the wiping procedure one more time, concentrating on collecting dust from the corners within the selected surface area.
- Wipes are folded to keep the collected dust within the wipe, avoid dust losses, and to expose a clean wipe surface for further collection.

Students should refer to **Attachment 3-A: Sample Collection Form** and **Attachment 3-B: Completed Sample Collection Form.** A checklist of the key steps involved in taking a dust sample can be found in **Attachment 3-D: Lead Dust Wipe Checklist** and the ***Lead Dust Sampling Technician Field Guide.***



Step 4: Sampling Procedure for Floors

- Fold the wipe again with the sample side folded in, and place the folded wipe into the sample tube. Avoid contact with other surfaces. Wipes should be stored only in their original container or in the tube. Do not use plastic bags or other items to hold wipes. Blank wipes should also be used. Blanks should be assigned sample numbers and locations so that the laboratory does not know they are blanks. Only your copy of the sample collection form should identify which samples are blanks
- Cap the container. Discard the gloves into a trash bag.

Students should refer to **Attachment 3-A: Sample Collection Form** and **Attachment 3-B: Completed Sample Collection Form.** A checklist of the key steps involved in taking a dust sample can be found in **Attachment 3-D: Lead Dust Wipe Checklist** and the ***Lead Dust Sampling Technician Field Guide.***

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Floor Sampling

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Floor Sampling

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Floor Sampling

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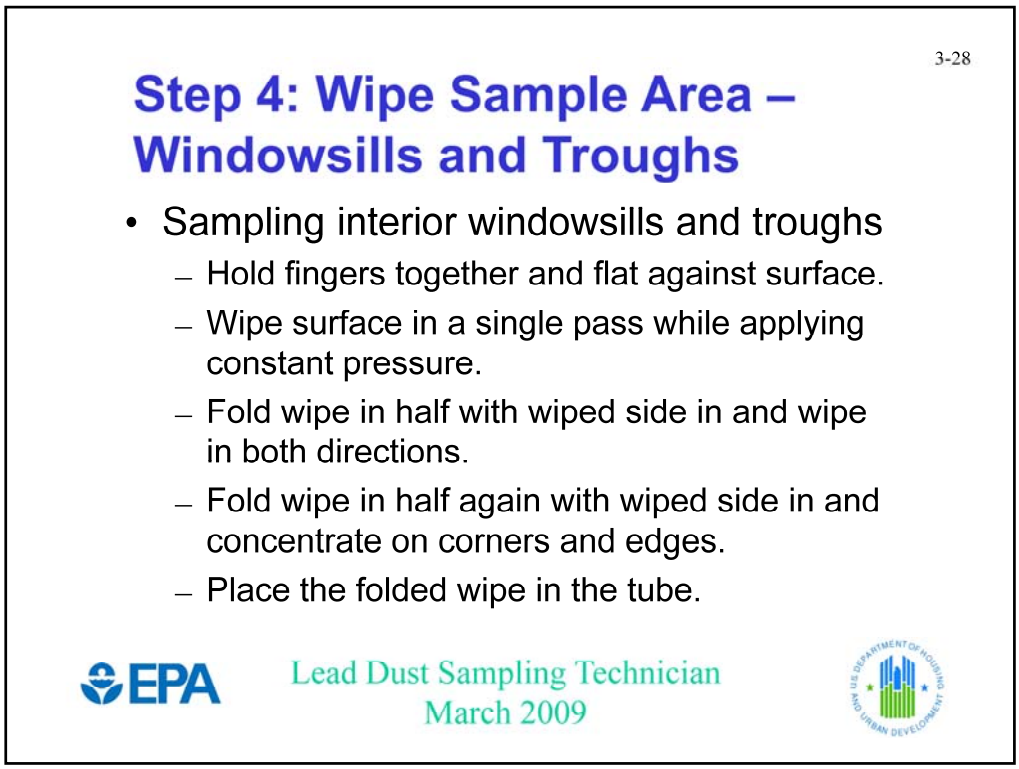
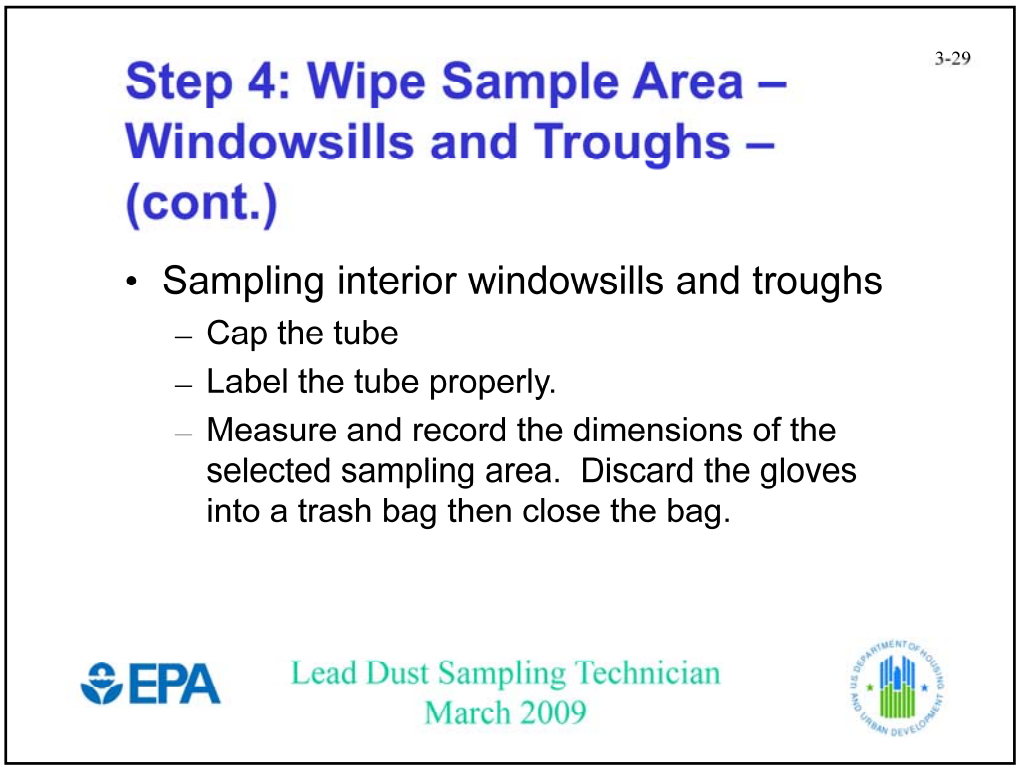


Special Considerations for Interior Windowsills and Troughs

Window troughs may contain pre-existing dust lead hazards. If possible, LDSTs should discuss the window trough sampling requirements with the certified renovator before the renovation begins. If the windows in the work area remain closed and covered with plastic during the renovation, window trough sampling will not be necessary.

Sampling Procedure for Windowsills and Troughs:

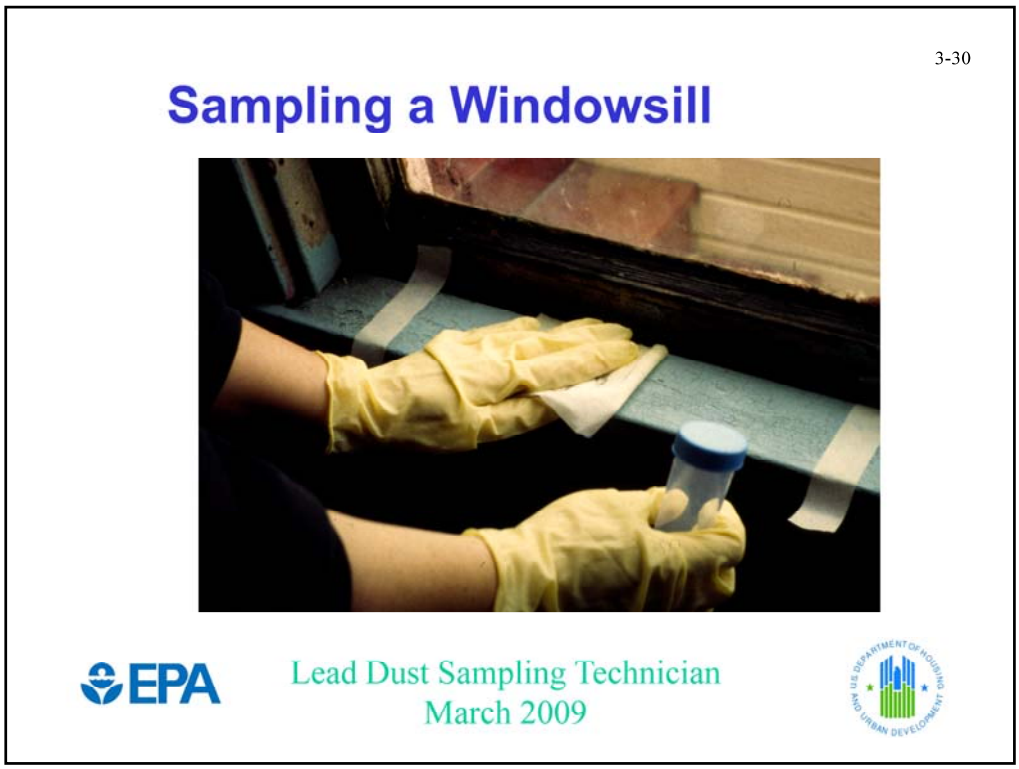
- Holding the fingers together and flat against the selected surface area, wipe the measured surface in one direction in a single pass. Apply pressure to the fingers while wiping the surface. This will avoid overloading the wipe on the first pass.
- Fold the wipe in half with the sample side folded in, and repeat the preceding wiping procedure in both directions within the selected surface area on one side of the folded wipe.
- Fold the wipe in half with the sample side folded in, and repeat the preceding wiping procedure one more time, concentrating on collecting settled dust from the corners within the selected surface area.



Special Considerations for Interior Windowsills and Troughs

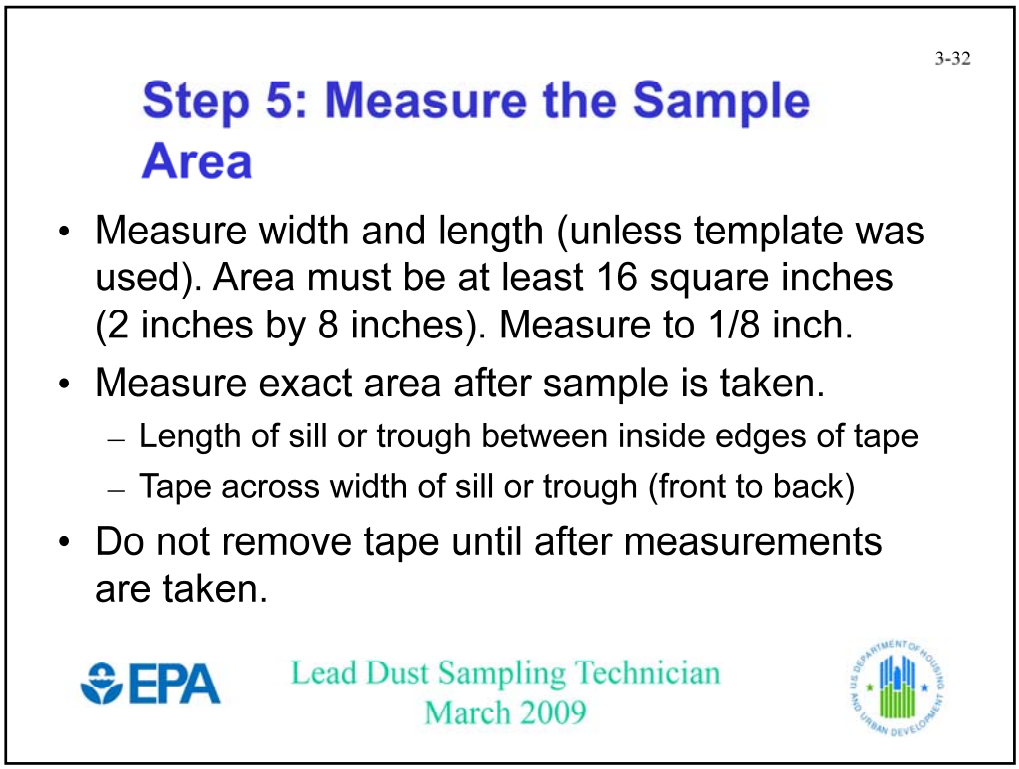
Sampling Procedure for Windowsills and Troughs:

- Fold the wipe again with the sample side folded in, and insert the folded wipe into the tube and cap it.
- Label the tube with sufficient information to uniquely identify the sample.
- Measure and record the dimensions of the selected sampling area (the area actually wiped during sample collection). Discard the gloves into a trash bag.



Note how the lead dust sampling technician is holding the wipe and moving across the windowsill.

Here is an example of how to sample a window trough. The trough is not taped because its area is less than 16 inches, so sample the entire trough and determine its area. Measure carefully and down to 1/8 of an inch. Make sure the window trough has been adequately cleaned before sampling.



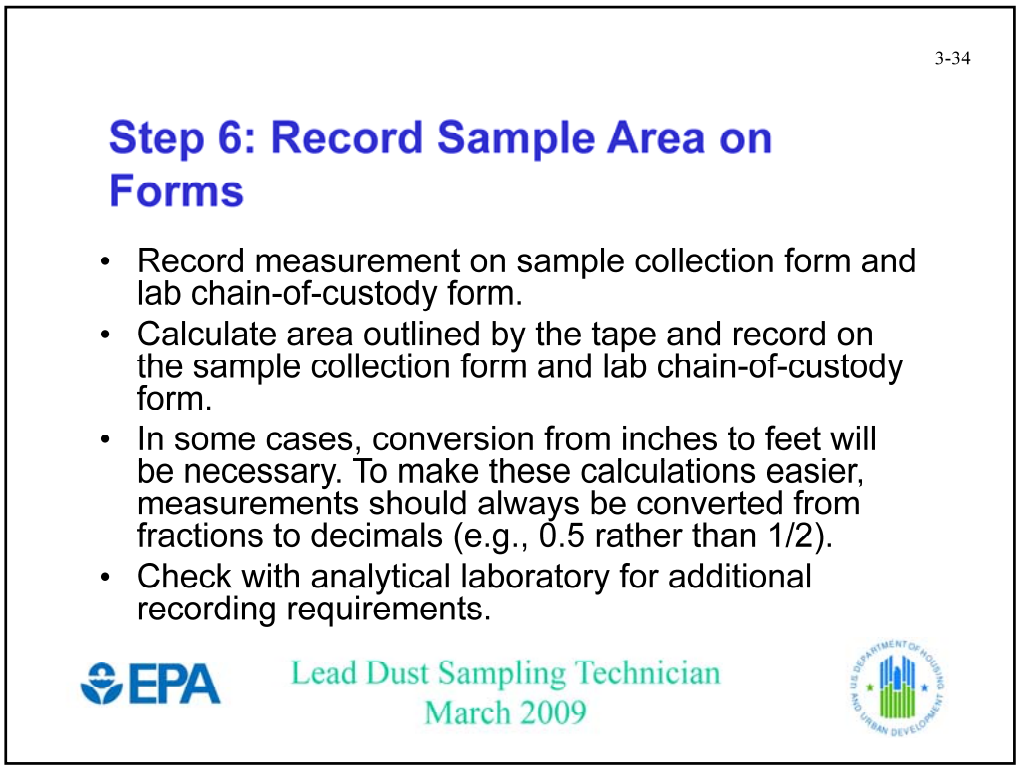
Step 5: Measure the Sample Area

If a template was used, record the dimensions of the template on the lab collection form. If a template was not used, you must measure the sample area.

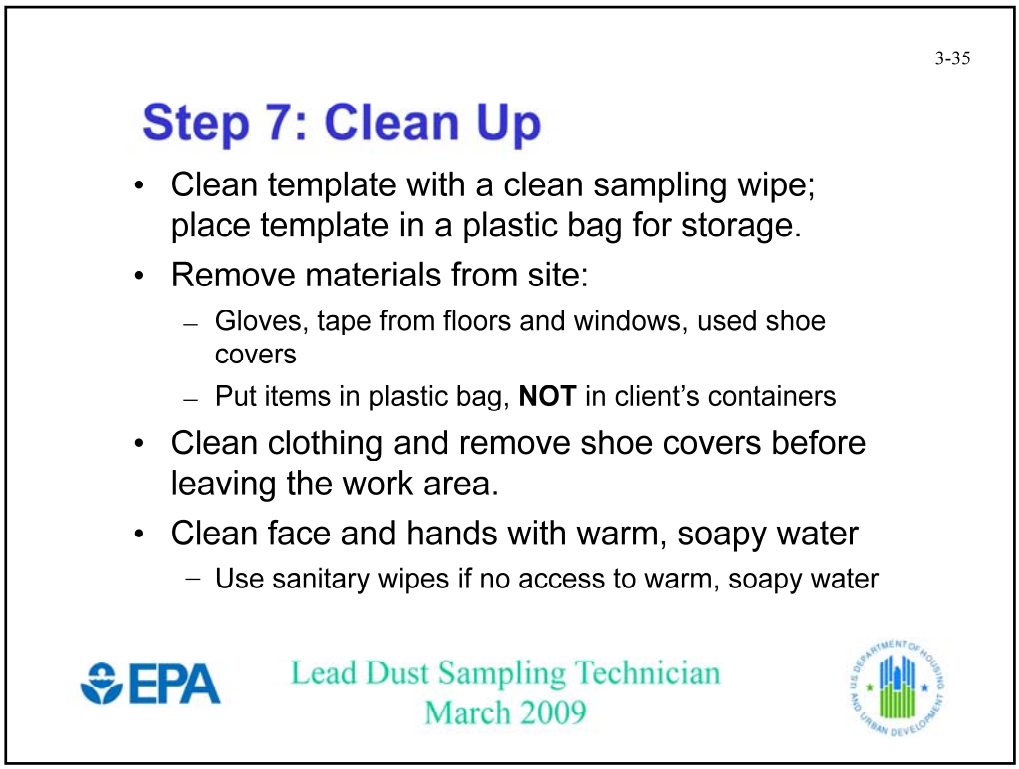
- Measure the exact length and width of the sample area with a tape measure after the dust sample has been taken. This allows you to get an accurate measurement without contaminating the sample area.
- Make sure you measure the area inside the tape, not the outside border.
- Always measure to an eighth of an inch (1/8”). Sloppy measurement can produce inaccurate results.

When the wiping is done, measure the area wiped, unless you used a template and know the dimensions already. Measure the length and width of the area wiped.

Note: The ruler does not have additional space between where the measurements begin and the edge of the ruler.



•See **Attachment 3-A: Sample Collection Form** and **Attachment 3-B: Completed Sample Collection Form.**
•Instructors should pull out **Attachment 3-C: Worksheet for Performing Mathematical Calculations from Fractions to Decimals** and review with the class. A few simple calculations for the class may be very useful.



Step 7: Clean Up

Sampling materials may be contaminated and therefore must be cleaned or removed from the site.

- Clean the template with a clean wipe and place it in a re-sealable plastic bag for storage. This decontaminates the template between uses and helps avoid contamination when it is not being used. Throw wipe away in trash bag.
- Be sure you have recorded the location and dimensions of the sample area before removing tape.
- Remove gloves, tape, and shoe covers. Throw them away in trash bag.
- Clean face and hands with warm, soapy water. (Use sanitary wipes if no access to warm, soapy water.)

Refer to the *Lead Dust Sampling Technician Field Guide* and **Attachment 3-D: Lead Dust Wipe Checklist,** which summarizes all the steps just described.

3-36

Hands-on Activity: Let's Try It

- You are now going to practice taking dust wipe samples.
- Each individual must demonstrate proficiency.
- Follow your instructor's directions for taking samples.
- You can refer to your *Field Guide* or **Attachment 3-D** for a list of key steps.

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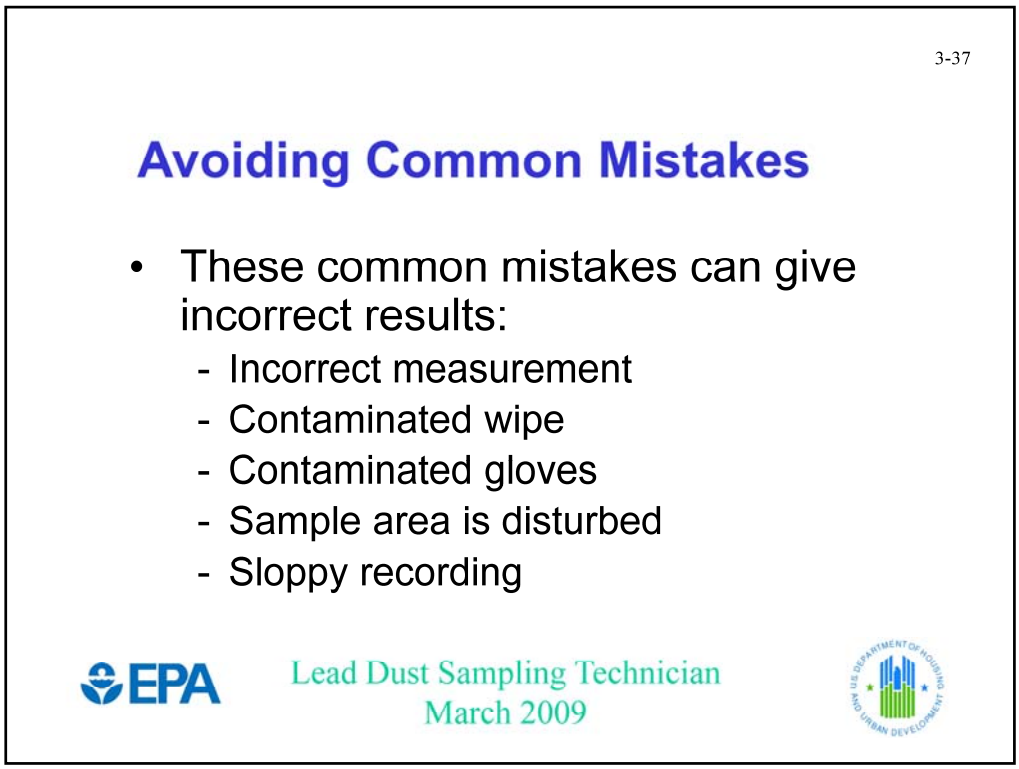
Activity: Take samples on a variety of surfaces – windowsills, troughs, and floors.



If the lead dust sampling technician makes any of the following common mistakes, the technician could get incorrect results:

Incorrect measurement. Small mistakes in reading the tape measure can produce misleading results. Being off by half an inch can make the difference between passing or failing the EPA/HUD standards for lead in dust.

Wipe is contaminated. It is important that the wipe is clean before you collect the sample and that you do not lose any dust before putting the wipe in the tube. Common sources of contamination include the following:

- Wipe touches the floor or window before you place it in the tube.
- Wipe falls to the floor before wiping and you do not get a new one.
- Wiping motions go beyond the template outline or taped area, collecting added dust or debris.
- Wipe is placed on the floor or interior sill while unscrewing the tube cap, collecting dust.

Gloves are contaminated. The gloves can contaminate the sample if they are not clean.

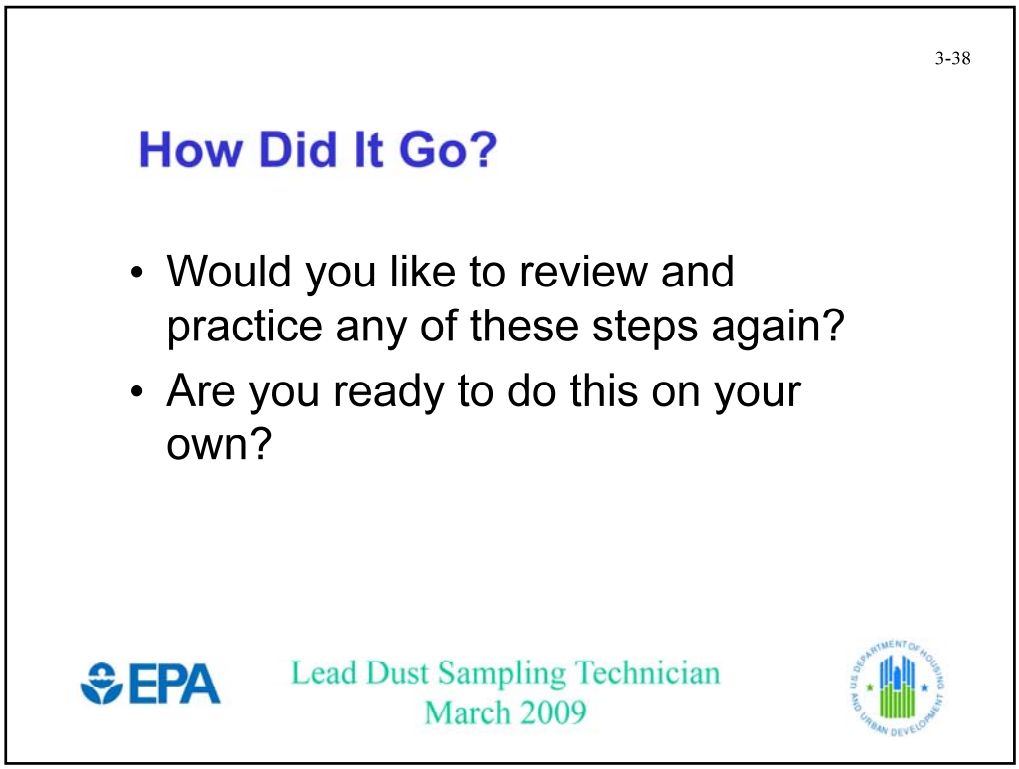
- Gloves are put on too early and you touch dust on other surfaces.
- Gloves are not changed for each sample. Previously used gloves can carry lead dust from the previous sample.

Sample area is disturbed. Contamination may remove or add lead dust to sample area before you wipe the area. The lead dust sampling technician should select a new area to sample.

- Place hand or tape measure inside sample area before you wipe it.
- Place hand inside sample area while taping down template to the floor.
- Slide template across sample area as you tape it down.
- Use template that has not been cleaned.

Sample area is recorded incorrectly. To avoid errors:

- Record measurements for interior sills and troughs immediately after measuring the area.
- Review forms before you submit them to double-check measurements.



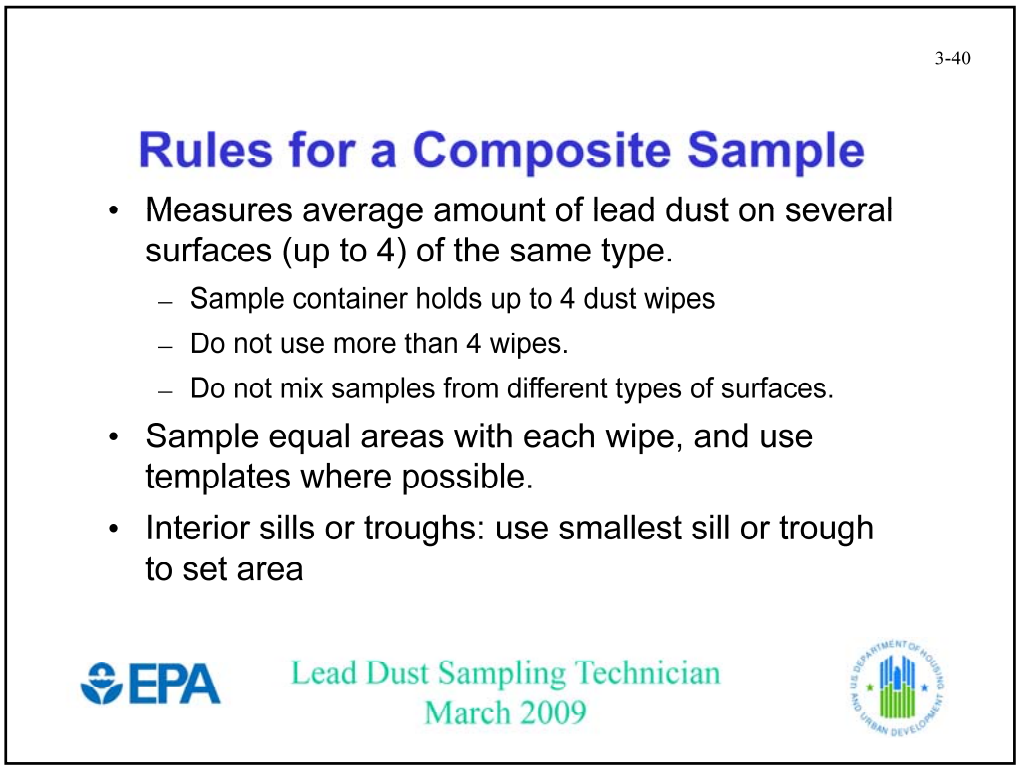
When you are done sampling, discuss these questions with the large group.

EPA allows composite samples during lead dust clearance testing. You may receive a request to take a composite sample during lead dust clearance testing. HUD discourages composite sampling for clearance. Analytical laboratories often have difficulty processing composite samples. Contact your laboratory before taking any composite samples.

A composite is a sample that holds up to four dust wipes in one container. Each wipe is called a subsample.

A composite tells you the average amount of lead dust across all the areas you sampled. This provides a measure of average exposure. Subsamples need to be collected from areas of equal size for the results to be an average.

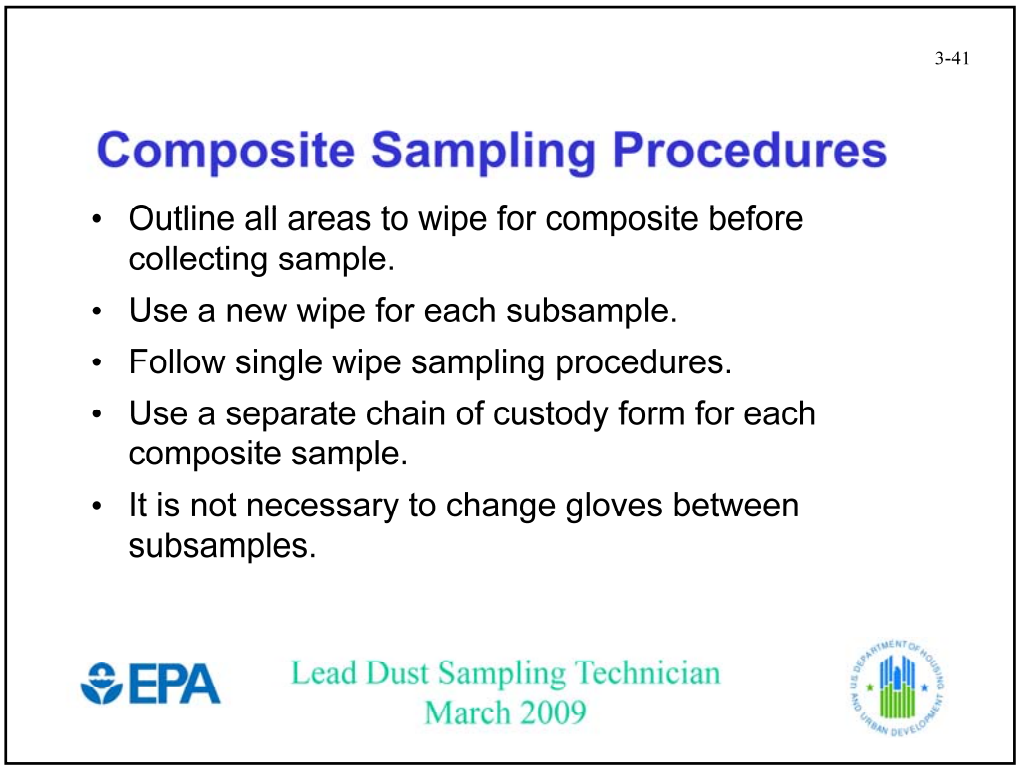
In contrast to single wipe samples, composite samples do not define the location of lead dust, if it exists. Rather, they simply identify that lead dust exists somewhere in the sampled area.



Make sure the areas sampled for each of the subsamples are the same size. If you include wipes that collected dust from areas with varying sizes, you will not get an accurate reading of the average levels. This should not be a problem if templates are used.

- **Floors.** Use a 12” x 12” sample area. Use a template or tape outline.
- **Interior windowsills and window troughs.** Identify the smallest interior windowsill and/or trough you plan to sample. Measure the length and width after you lay down the template or tape and take the dust sample. Use these measurements to outline the same sample area for all of the other interior sills and/or troughs. This will guarantee that all the interior sills or troughs sampled are the same size.

Do not combine subsamples across units. A composite sample can only include dust wipes from a single unit. Do not use more than four wipes in a composite sample. It is difficult for labs to analyze composites holding more than four wipes. Check that your lab has experience analyzing composite wipes.



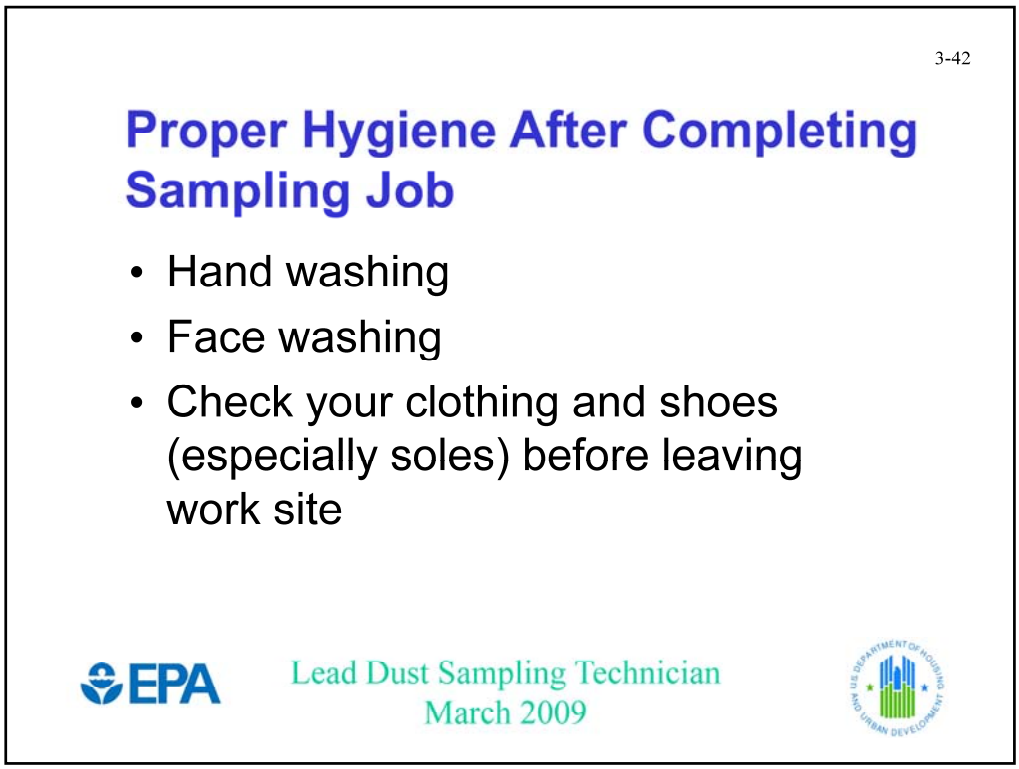
•Whenever possible, use a template when collecting composite samples. If a template is not available, outline the areas you plan to wipe before collecting the subsamples. Remember that the sample size must be the same for all subsamples included in a composite sample.

•Use a separate wipe for each subsample area wiped.

•Follow the single-wipe sampling procedures.

•You can use one set of gloves for all subsamples in the composite. However, if your glove touches an area outside the sample area, put on a new one.

•After wiping each subsample area, carefully place the wipe into the tube.


3-42
Proper Hygiene After Completing Sampling Job
• Hand washing
• Face washing
• Check your clothing and shoes (especially soles) before leaving work site
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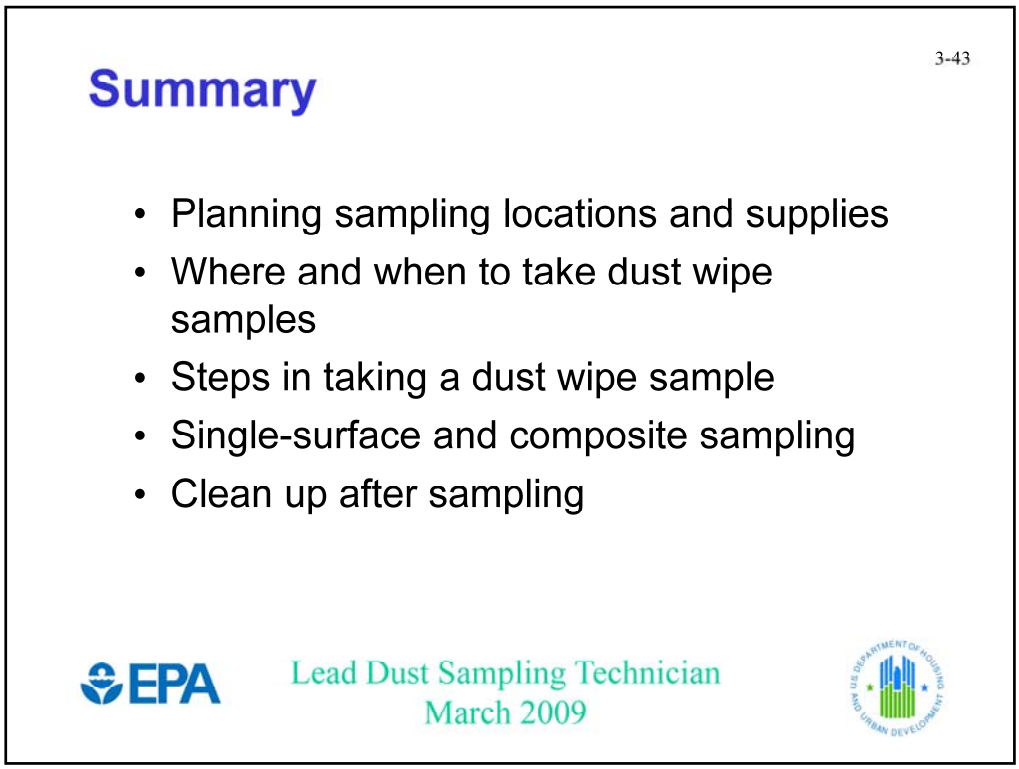
3-43
Summary
• Planning sampling locations and supplies
• Where and when to take dust wipe samples
• Steps in taking a dust wipe sample
• Single-surface and composite sampling
• Clean up after sampling
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Attachment 3-A: Sample Collection Form
Field Dust Wipe Sampling Form

Name of Sampling Technician: _____

Name of Property Owner: _____

Property Address: _____ **Apt. #:** _____

Sample Number	Room and Location (name of room used by owner)	Surface Type* (circle one)	Dimensions of Sample Area (in x in)	Area (ft^2)
		FL WS WT		
		FL WS WT		
		FL WS WT		
		FL WS WT		
		FL WS WT		
		FL WS WT		
		FL WS WT		
		FL WS WT		
		FL WS WT		

* Surface types FL = Floor; WS = Windowsill; WT = Window Trough

Total number of samples on this page: _____

Attachment 3-B: Completed Sample Collection Form
Field Dust Wipe Sampling Form

Name of Sampling Technician: Jane White

Name of Property Owner: Smith Family

Property Address: 78 East Main St., Hammond, IN 89898 **Apt. #: 25**

Sample Number	Room and Location (name of room used by owner)	Surface Type* (circle one)	Dimensions of Sample Area (in x in)	Area (ft^2)
98-1	**Upstairs lg bedroom – near doorway**	**FL** WS WT	**$11\frac{5}{8}$" x $12\frac{1}{8}$"**	**.979**
98-2	**Upstairs lg bedroom – selected window in room on west side of room**	FL **WS** WT	**$23\frac{15}{16}$" x $2\frac{7}{8}$"**	**.478**
98-3	**Upstairs sm bedroom – in center of room**	**FL** WS WT	**$11\frac{13}{16}$" x $12\frac{1}{2}$"**	**1.025**
98-4	**Upstairs sm bedroom – only window in room**	FL **WS** WT	**$24\frac{1}{8}$" x $3\frac{1}{4}$"**	**.544**
98-5	**Kitchen – near stove**	**FL** WS WT	**$11\frac{3}{4}$" x $11\frac{3}{8}$"**	**.928**
98-6	**Kitchen – above sink**	FL **WS** WT	**$23\frac{9}{16}$" x 3"**	**.491**
		FL WS WT		
		FL WS WT		
		FL WS WT		

* Surface types FL = Floor; WS = Windowsill; WT = Window Trough

Total number of samples on this page: **6**

Attachment 3-C: Worksheet for Performing Mathematical Calculations from Fractions to Decimals

When recording the sample area on the dust wipe collection form, you may need to perform one or both of the following conversions: converting fractions to decimals and converting inches to square feet. To facilitate the mathematical calculations, fractions should always be converted to decimals first. Refer to the following Table of Common Conversions for assistance.

1. Converting Fractions to Decimals: Table of Common Conversions

Fraction	Decimal
1/8	**0.125**
2/8	**0.250**
3/8	**0.375**
4/8	**0.500**
5/8	**0.625**
6/8	**0.750**
7/8	**0.875**

Fraction	Decimal
1/4	**0.250**
2/4	**0.500**
3/4	**0.750**
1/3	**0.333**
2/3	**0.667**
1/2	**0.500**

2. Converting inches to square feet (ft²)

If the area you sampled was not a square foot, you will need to convert it to this dimension. One foot equals 12 inches, and 1 square foot equals 144 square inches.

- Record the sample area in inches (in) as opposed to feet (ft).
- Convert the sample area to square inches (in²). Round the number to a maximum of three decimal places.
- Divide the square inches by 144 to get square feet (ft²). Round the number to a maximum of three decimal places.

Dimensions of sample area in inches (in)	Length: _____ in Width:_____ in
Multiply length times width to calculate the area in square inches (in²)	_____ in × _____ in = _____ in²
Divide the area in square inches (in²) by 144 to calculate the area in square feet (ft²)	_____ in² ÷ 144 = _____ ft²

3. Example: Convert an area with length of 20 ½ inches and a width of 5 ¼ inches to square feet.

- Convert fractions to decimals: 20 ½ in → 20.500 in 5 ¼ in → 5.250 in
- Calculate the area in square inches: 20.500 in × 5.250 in = 107.625 in²
- Calculate the area in square feet: 107.625 in² ÷ 144 = 0.747 ft²

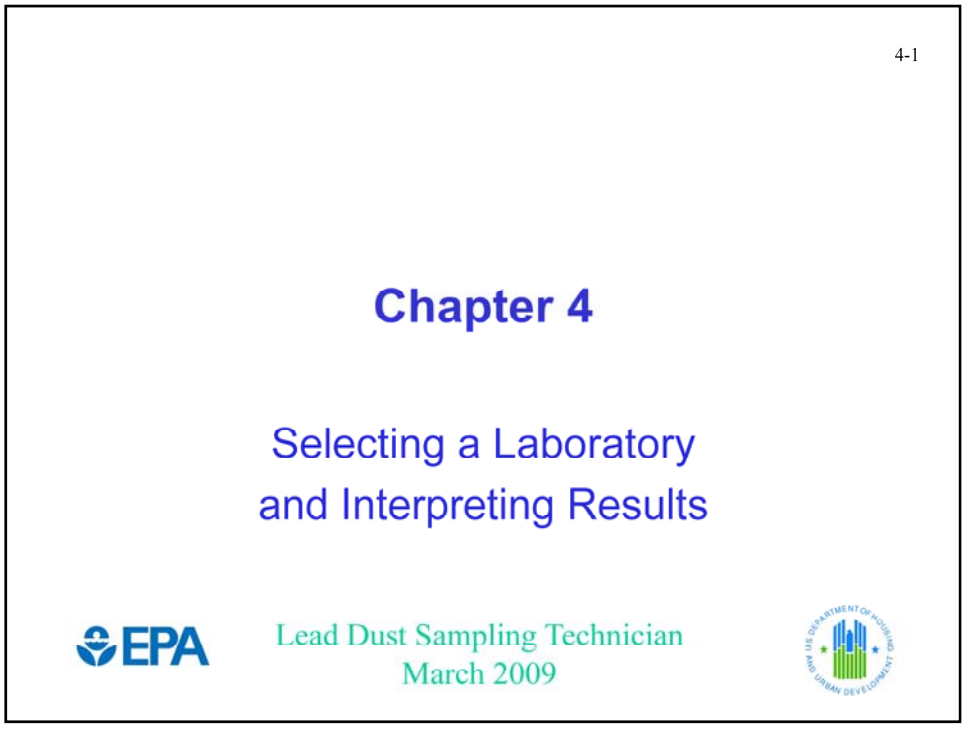
Attachment 3-D: EPA Lead Dust Wipe Checklist

These are the steps involved in taking a lead dust wipe sample. When you are collecting dust samples, you should follow each of these steps. **Note:** The procedure for sampling floors is different than the procedure for sampling windowsills and troughs.

Step	Criteria	√
1.	**Put on disposable shoe covers and lay out the sample area**	
	• Clean the template and properly dispose of wipe	
	• Tape down template; or lay out sample area using tape	
2.	**Prepare the tubes**	
	• Label tube with identification number	
	• Record identification number on sample collection and chain-of-custody forms	
	• Partially unscrew cap of tube and place tube near the area planned for sampling	
3.	**Put on clean gloves**	
4.	**Wipe sample area and place wipe in centrifuge tube**	
4a.	***First swipe (floors):***	
	• Press wipe down firmly	
	• Make overlapping "S"-like motions on the sample surface while moving side-to-side	
	• Do not cross outer boundary tape or template	
4b.	***Second swipe (floors):***	
	• Fold wipe in half, keeping dust inside, and press wipe down firmly	
	• Make top-to-bottom overlapping "S"-like motions	
	• Do not cross outer boundary tape or template	
4c.	***Third swipe (floors):***	
	• Fold wipe in half, keeping dust inside, and press wipe down firmly	
	• Repeat the wiping procedure one more time (focusing in on corners)	
	• Do not cross outer boundary tape or template	
	• Fold wipe again, keeping all dust inside wipe	
	• Place wipe in sample container tube	
4d.	***Windowsills and troughs (side-to-side)***	
	• Hold fingers together, wipe surface in one direction, and press wipe down firmly	
	• Fold wipe in half and repeat wiping procedure, using a reverse direction	
	• Fold wipe in half again and repeat wiping procedure concentrating on corners	
	• Fold wipe in again and insert into a rigid-walled container	
	• Label the rigid-walled container to identify sample	
5.	**Measure the sample area**	
	• Measure the area inside the tape, not the outside border	

	• Measure to $^{1}/_{8}$ inch	
6.	**Record sample area**	
	• Calculate sample area	
	• Record measurements on the sample collection form	
	• Fill in chain-of-custody form	
7.	**Clean up**	
	• Clean template with new wipe, place template in a plastic bag for storage, and then discard wipe	
	• Put gloves, used shoe covers, and tape from floors and windows into trash bags	
	• Check your clothing and shoes (especially soles) before leaving work site	
	• Wash your face and hands with warm, soapy water or sanitary wipe	

Chapter 4: Selecting a Laboratory


4-1
Chapter 4
Selecting a Laboratory
and Interpreting Results
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Lead Dust Sampling Technician
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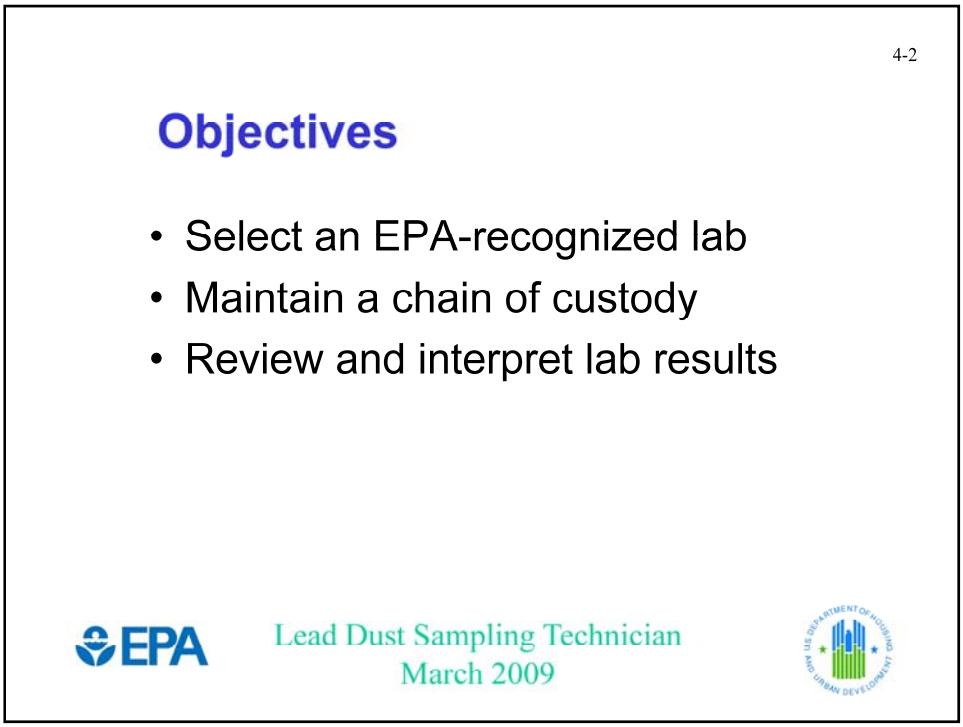
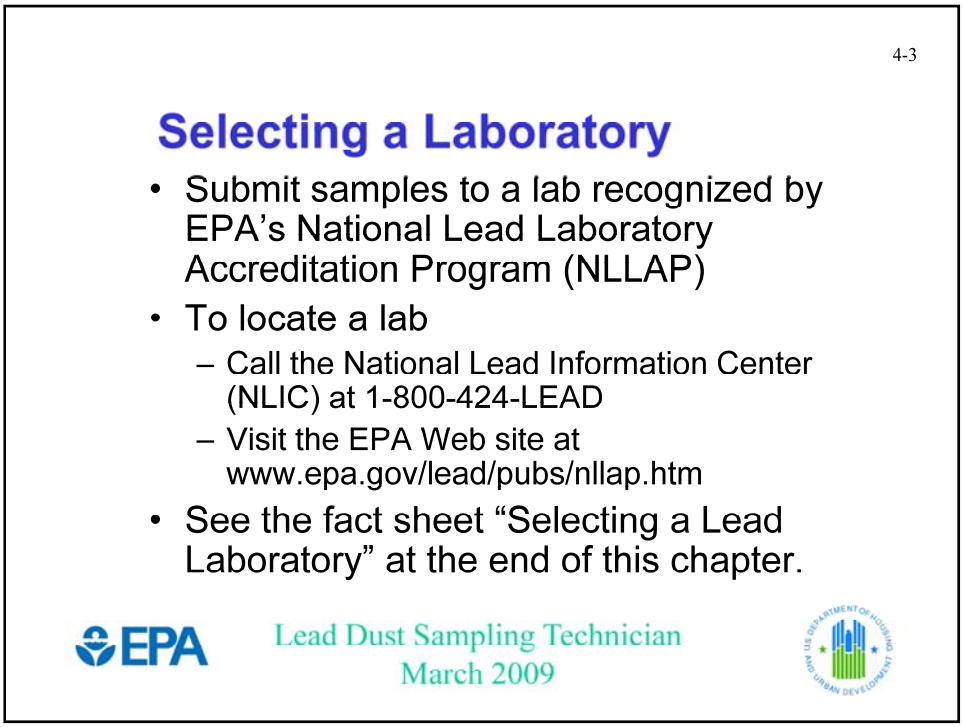


After performing lead dust wipe sampling, you will need to submit the samples to a laboratory for analysis and interpret the laboratory results to determine the levels of lead dust in a unit. This chapter describes the steps you will need to take.

At the end of this chapter, you will be able to do the following:

- Select an EPA-recognized laboratory and explain why proper selection is important
- List the important steps to ensure samples are not tampered with or lost, maintaining a chain of custody
- Review and interpret the laboratory results

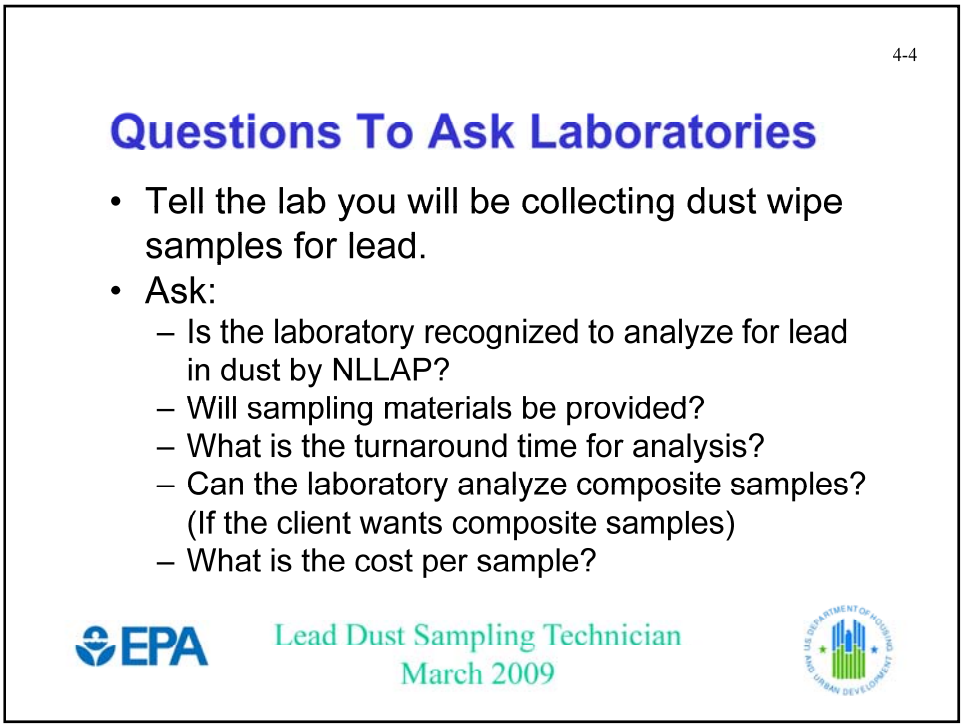


All samples must be submitted to a laboratory recognized by the EPA's National Lead Laboratory Accreditation Program (NLLAP) to be proficient in lead in dust analysis.

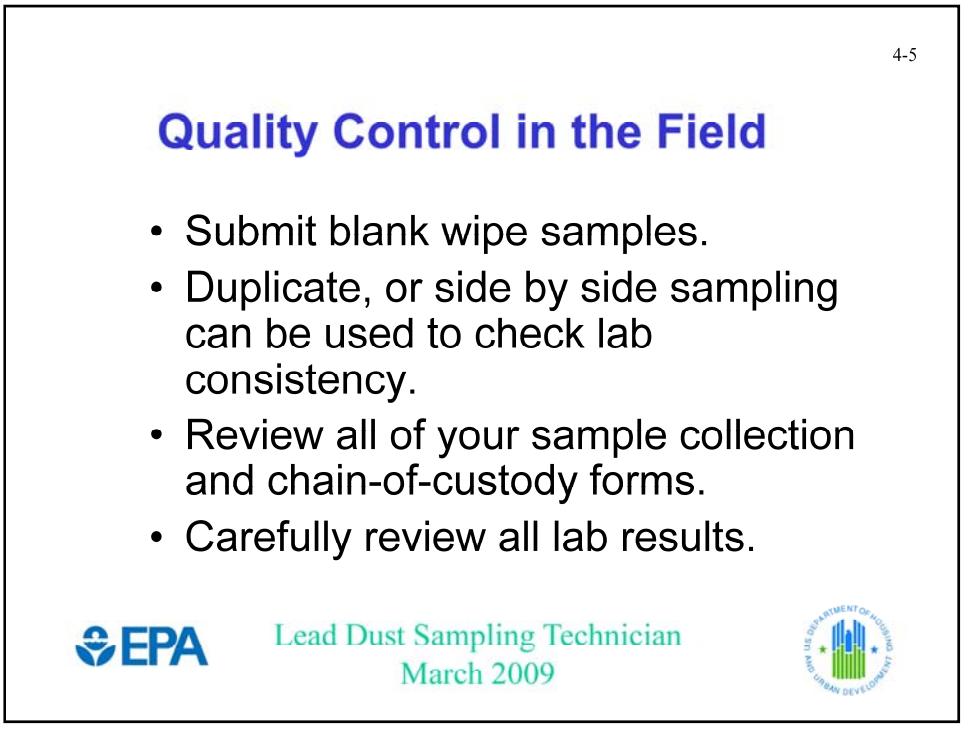
- The NLLAP provides the public with a list of recognized laboratories for analyzing lead in dust samples. You can contact the National Lead Information Center (NLIC) Clearinghouse at 1-800-424-LEAD, or visit the EPA Web site at www.epa.gov/lead/pubs/nllap.htm for an up-to-date list of NLLAP-recognized laboratories. A technical bulletin entitled *Selecting a Laboratory for Lead Analysis: The EPA NLLAP*, EPA 747-G-99-002, April 1999, is also on the EPA Web site.
- For a laboratory to become EPA-NLLAP recognized, it must participate in the Environmental Lead Proficiency Analytical Testing (ELPAT) Program and undergo a quality system audit, including an onsite assessment by a laboratory outside accreditation body participating in the NLLAP, such as the American Industrial Hygiene Association.

It is important to recognize that not every recognized laboratory will meet your needs. Taking the time to select a good laboratory will save you time and effort in the long run. Knowing the costs associated with laboratory supplies and the analysis will also help you calculate the fees you will charge customers. Even if your company has selected a laboratory for you to work with, it is a good idea to ask a few simple, straightforward questions so you can find out whether the laboratory meets some basic quality criteria.

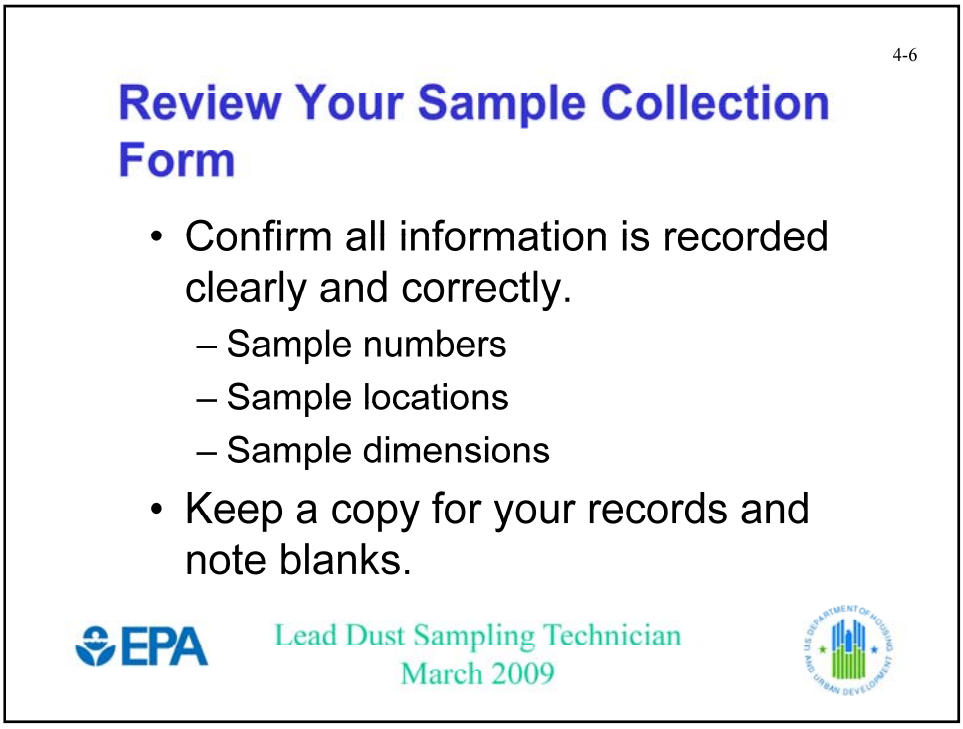
See **Attachment 4-A: Questions to Ask Laboratory**



Review **Attachment 4-A: Questions To Ask Laboratory.**



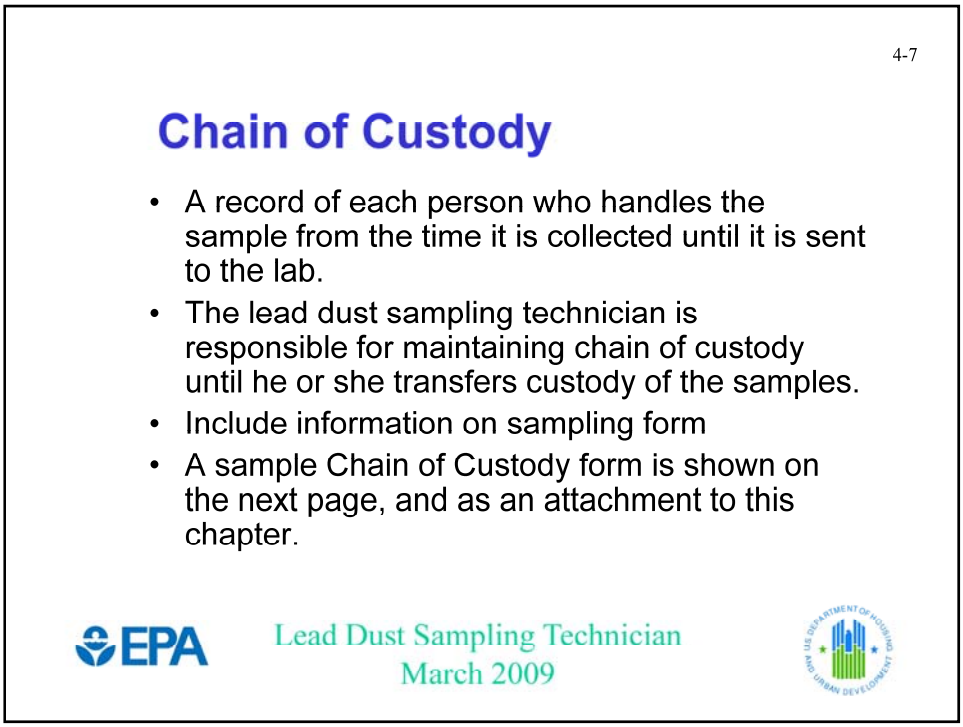
Lead dust clearance testing and analysis require a great deal of care and precision by both you and the laboratory. Follow the steps above to help control the quality of the lab results. Each step is discussed in further detail on the following slides.



In **Chapter 3,** we described how to record sample information on the sample collection form clearly and accurately. Before you send the samples to the laboratory, you should check your sample collection form to confirm that all of the following information is recorded clearly and correctly.

- **Sample numbers -** Samples should be numbered sequentially, in the order you took them. (This information must be included accurately on the laboratory chain-of-custody form.)
- **Sample locations -** These should be precise. For example, "left window on back wall in master bedroom" is better than "bedroom window."
- **Sample dimensions for dust wipe samples -** As discussed in **Chapter 3,** these dimensions are extremely important and should be recorded to the nearest 1/8 of an inch.

After completing the form, it is essential that you keep a copy for your records and to note the ID numbers of your blank samples.



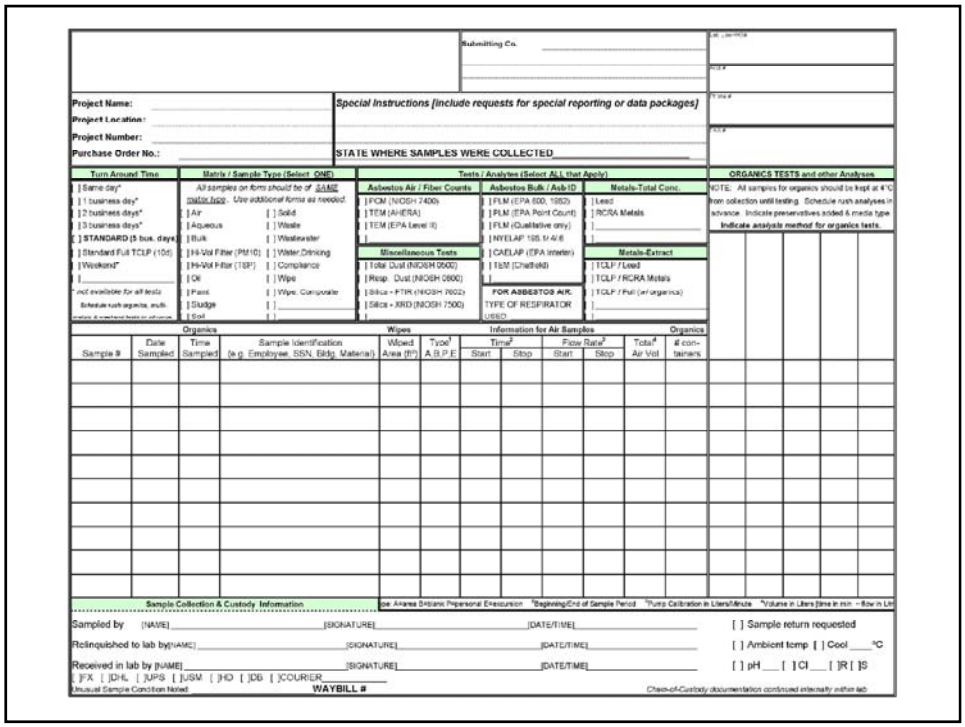
It is important that samples are not lost before or during the analysis process. To trace the path of the sample, you should establish a "chain of custody." This simply means that every person who handles the sample must sign and date a form.

Who is in the chain of custody? People in the chain of custody may include:

- Lead dust sampling technician
- Technician's supervisor
- Person packing the samples for shipment
- Person picking up and shipping the samples
- Person receiving the shipment at the laboratory

Maintaining the chain of custody - Ensure that the chain of custody is maintained from when you take the samples until you transfer custody of the samples.

- Space for documenting the chain of custody may be included as part of the sample collection form or you may use a separate form. There should be enough space for each individual handling the sample to sign and date the form – 5 to 7 lines should be sufficient.
- You should also keep a copy of any shipping or mailing forms documenting when the samples were sent to the laboratory.
- You should send the package with delivery confirmation and return receipt requested, or the equivalent shipping record.



Submitting Co.

Project Name:
Project Location:
Project Number:
Purchase Order No.:

Special Instructions [include requests for special reporting or data packages]

STATE WHERE SAMPLES WERE COLLECTED

Turn Around Time

[ ] Same day*
[ ] 1 business day*
[ ] 2 business days*
[ ] 3 business days*
[ ] **STANDARD (5 bus. days)**
[ ] Standard Full TCLP (10d)
[ ] Weekend*
[ ]
* not available for all tests
Schedule rush organics, multi-metals & weekend tests in advance

Matrix / Sample Type (Select ONE)

All samples on form should be of SAME matrix type. Use additional forms as needed.

[ ] Air
[ ] Aqueous
[ ] Bulk
[ ] Hi-Vol Filter (PM10)
[ ] Hi-Vol Filter (TSP)
[ ] Oil
[ ] Paint
[ ] Sludge
[ ] Soil
[ ] Solid
[ ] Waste
[ ] Wastewater
[ ] Water,Drinking
[ ] Compliance
[ ] Wipe
[ ] Wipe, Composite
[ ]
[ ]

Tests / Analytes (Select ALL that Apply)

Asbestos Air / Fiber Counts

[ ] PCM (NIOSH 7400)
[ ] TEM (AHERA)
[ ] TEM (EPA Level II)
[ ]

Miscellaneous Tests

[ ] Total Dust (NIOSH 0500)
[ ] Resp. Dust (NIOSH 0600)
[ ] Silica - FTIR (NIOSH 7602)
[ ] Silica - XRD (NIOSH 7500)
[ ]

Asbestos Bulk / Asb ID

[ ] PLM (EPA 600, 1982)
[ ] PLM (EPA Point Count)
[ ] PLM (Qualitative only)
[ ] NYELAP 198.1/ 4/6
[ ] CAELAP (EPA interlr)
[ ] TEM (Chatfield)
[ ]

FOR ASBESTOS AIR:

TYPE OF RESPIRATOR USED:

Metals-Total Conc.

[ ] Lead
[ ] RCRA Metals
[ ]
[ ]

Metals-Extract

[ ] TCLP / Lead
[ ] TCLP / RCRA Metals
[ ] TCLP / Full (w/ organics)
[ ]
[ ]

ORGANICS TESTS and other Analyses

NOTE: All samples for organics should be kept at 4°C from collection until testing. Schedule rush analyses in advance. Indicate preservatives added & media type.

Indicate analysis method for organics tests.

Organics				Wipes		Information for Air Samples					Organics
Sample #	Date Sampled	Time Sampled	Sample Identification (e.g. Employee, SSN, Bldg, Material)	Wiped Area (ft²)	Type[1] A, B, P, E	Time[2] Start	Time[2] Stop	Flow Rate[3] Start	Flow Rate[3] Stop	Total[4] Air Vol	# con-tainers

Sample Collection & Custody Information

[1]Air Areas [2]Blank [3]Personal Exposure [4]Beginning/End of Sample Period [5]Pump Calibration in Liters/Minute [6]Volume in Liters [time in min. - flow in Lit

Sampled by [NAME] [SIGNATURE] [DATE/TIME]

Relinquished to lab by [NAME] [SIGNATURE] [DATE/TIME]

Received in lab by [NAME] [SIGNATURE] [DATE/TIME]

[ ]FX [ ]DHL [ ]UPS [ ]USM [ ]HD [ ]DB [ ]COURIER

[ ]Unusual Sample Condition Noted **WAYBILL #**

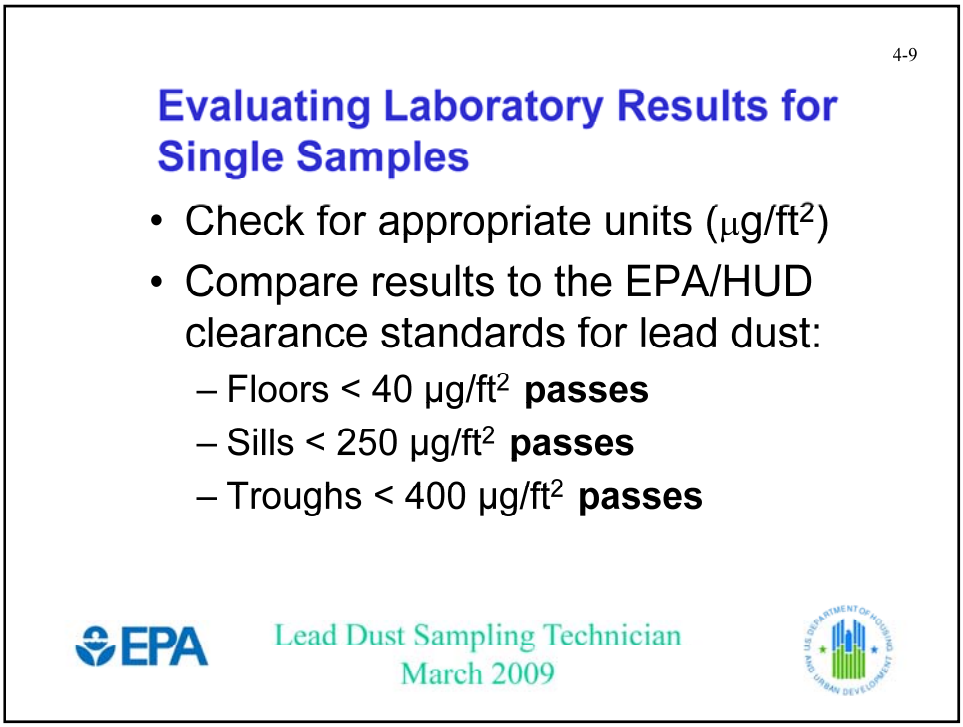
[ ] Sample return requested

[ ] Ambient temp [ ] Cool ____°C

[ ] pH ____ [ ] Cl ____ [ ]R [ ]S

Chain-of-Custody documentation continued internally within lab

This form appears at the end of this chapter.

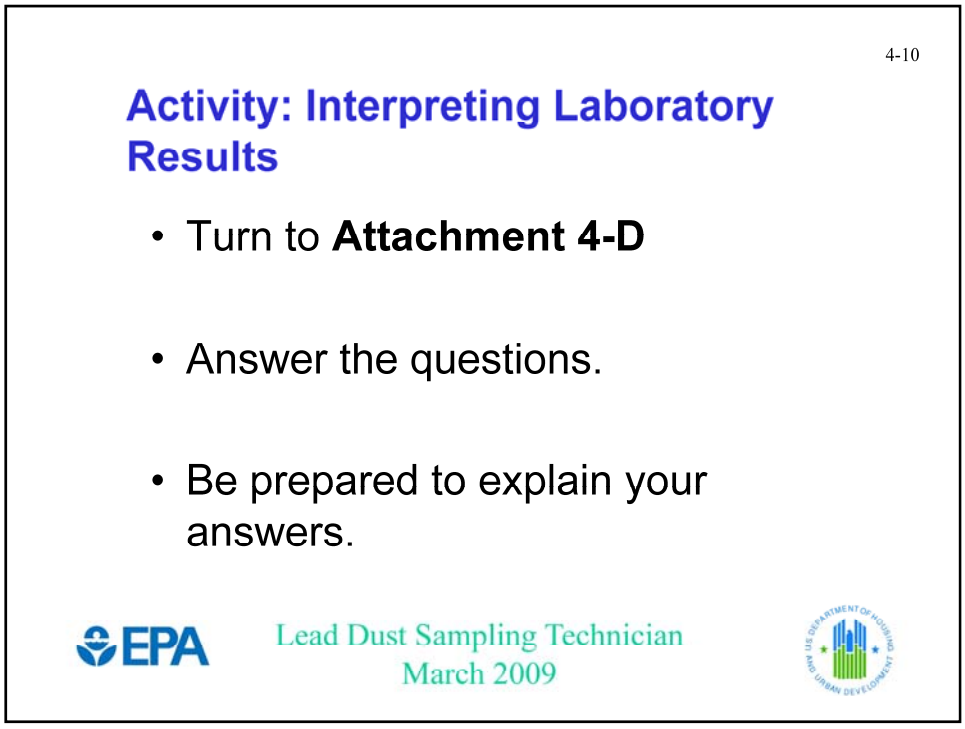


When you receive the results from the laboratory, you must interpret them to determine whether they pass or fail clearance. This section describes dust lead hazards and the process used to evaluate the sample results. Specifically, you will need to evaluate the laboratory results, converting them if necessary, and comparing them to the Federal or State standards.

To evaluate the laboratory results, you may need to take the steps listed below. These steps should be implemented as follows:

Step 1: Check the units. If results are not reported in µg/ft^2, use the conversion table (see **Attachment 4-C: Worksheet for Performing Mathematical Conversions for Dust Samples**).

Step 2: Compare the results to the EPA clearance standard for lead dust. Once you have made the necessary conversion, you can compare the laboratory results to the appropriate EPA clearance standard for lead dust. EPA clearance standards have been developed for lead dust on floors, interior windowsills, and window troughs. It is important to recognize that the levels for lead dust are different for each of these three surfaces. If test results equal or exceed the standards, the unit, worksite, or common area represented by the sample fails the dust clearance test.


4-10
Activity: Interpreting Laboratory Results
• Turn to Attachment 4-D
• Answer the questions.
• Be prepared to explain your answers.
EPA
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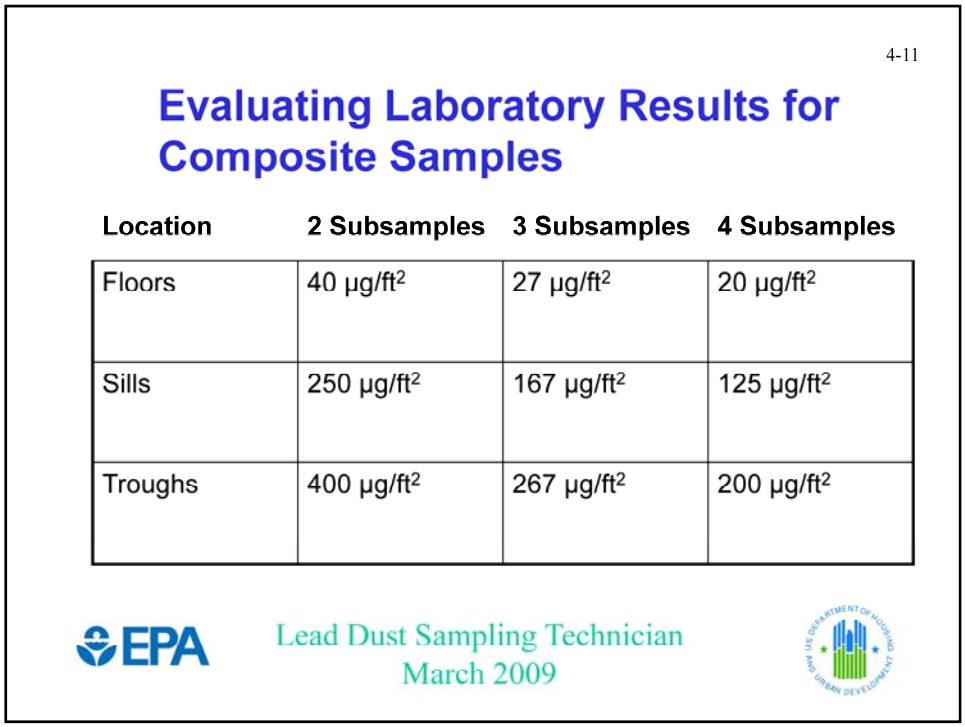
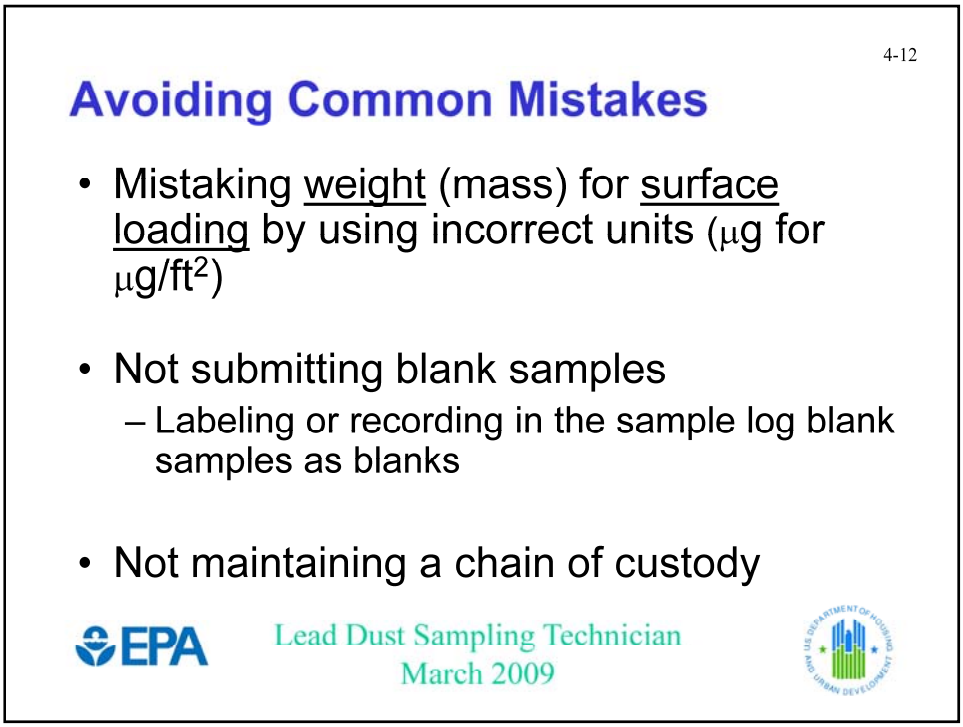


Composite samples determine the average of the dust lead levels on the surfaces that make up the composite.

To minimize the chance that any individual surface included in the composite does not fail clearance, composite samples that contain more than two subsamples are compared to more stringent standards than are single-surface samples.

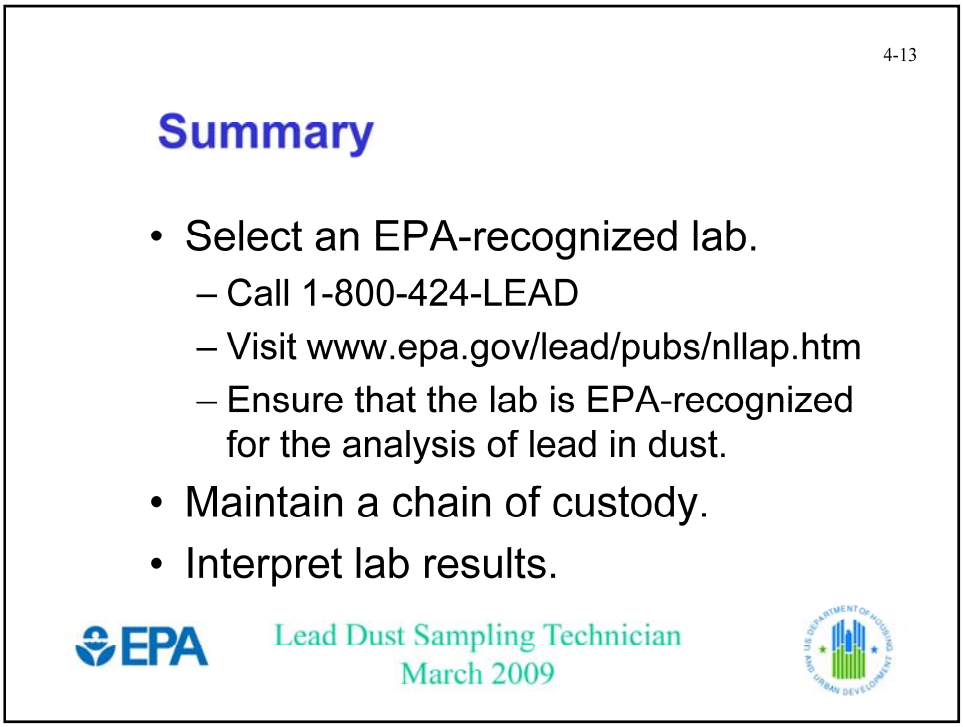


Listed above are some common mistakes you might make while performing any of the activities listed on the previous slide.

- **Mistaking the units.** One common mistake is not understanding the units of measurement provided in the lab report. When the results come from the laboratory, check whether they are provided in µg or µg/ft^2. If they are in µg, you must convert them to µg/ft^2 before recording them on your report and interpreting results. Discuss with your laboratory how results are reported.

- **Failing to submit blank samples.** Another common mistake is not submitting blank samples. Without this mechanism, you have no way of verifying if the laboratory results were uncontaminated, or that you used good sampling techniques. Submit one blank sample for every unit sampled.

- **Failing to maintain the chain of custody.** This is your only mechanism to track the handling of the sample. The chain-of-custody form must be maintained from the time you take the dust wipe sample until you transfer custody. Re-sampling is recommended if this document is not maintained.


4-13
Summary
• Select an EPA-recognized lab.
– Call 1-800-424-LEAD
– Visit www.epa.gov/lead/pubs/nllap.htm
– Ensure that the lab is EPA-recognized for the analysis of lead in dust.
• Maintain a chain of custody.
• Interpret lab results.
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Lead Dust Sampling Technician
March 2009

Attachment 4-A: Questions to Ask Laboratory

Is the laboratory recognized by NLLAP?	All samples must be analyzed by an NLLAP laboratory. You can contact the NLIC Clearinghouse at 1-800-424-LEAD for an up-to-date list of NLLAP-recognized laboratories. Even after selecting a laboratory, you should check the laboratory's accreditation every 6 months.
What is the turnaround time for sample analysis?	The laboratory turnaround time is an important factor; labs usually provide results within 1 to 3 days. A faster turnaround time allows you to be more responsive to your client but may cost more money.
What is the cost per sample?	Prices can vary depending on how quickly you want the results. A 6-hour turnaround will cost more than samples analyzed over a few days.
Will the laboratory provide sampling materials?	Some laboratories will provide you with the materials necessary to perform sampling. You may want to select a laboratory that provides these materials because laboratory-supplied materials and forms can help minimize potential errors in the analysis and recordkeeping.
Can the laboratory analyze composite samples?	It is good practice to check in advance the laboratory's capabilities in analyzing composite samples, if your client wants you to collect composite samples. Some laboratories do not offer this service.
Does the laboratory perform all the necessary mathematical calculations?	The Federal guidance is provided in µg/ft². Depending on the size of the sample or sample area, some mathematical calculations may need to be performed to convert the sample area to 1 square foot. Selecting a laboratory that will perform this calculation for you can reduce the possibility of mathematical errors.

Blank Chain of Custody Form

Chain of Custody Form

	Submitting Co.	Lab Use-WO#
		Acct #
Project Name:	***Special Instructions [include requests for special reporting or data packages]***	Phone #
Project Location:		FAX #
Project Number:		
Purchase Order No.:	**STATE WHERE SAMPLES WERE COLLECTED**	

Turn Around Time

[ ] Same day*
[ ] 1 business day*
[ ] 2 business days*
[ ] 3 business days*
[ ] **STANDARD (5 bus. days)**
[ ] Standard Full TCLP (10d)
[ ] Weekend*
[ ]_____
* *not available for all tests*
Schedule rush organics, multi-metals & weekend tests in advance.

Matrix / Sample Type (Select ONE)

All samples on form should be of SAME matrix type. Use additional forms as needed.

[ ] Air
[ ] Aqueous
[ ] Bulk
[ ] Hi-Vol Filter (PM10)
[ ] Hi-Vol Filter (TSP)
[ ] Oil
[ ] Paint
[ ] Sludge
[ ] Soil
[ ] Solid
[ ] Waste
[ ] Wastewater
[ ] Water,Drinking
[ ] Compliance
[ ] Wipe
[ ] Wipe. Composite
[ ]_____
[ ]_____

Tests / Analytes (Select ALL that Apply)

Asbestos Air / Fiber Counts
[ ] PCM (NIOSH 7400)
[ ] TEM (AHERA)
[ ] TEM (EPA Level II)
[ ]_____

Miscellaneous Tests
[ ] Total Dust (NIOSH 0500)
[ ] Resp. Dust (NIOSH 0600)
[ ] Silica - FTIR (NIOSH 7602)
[ ] Silica - XRD (NIOSH 7500)
[ ]_____

Asbestos Bulk / Asb ID
[ ] PLM (EPA 600, 1982)
[ ] PLM (EPA Point Count)
[ ] PLM (Qualitative only)
[ ] NYELAP 198.1/.4/.6
[ ] CAELAP (EPA Interim)
[ ] TEM (Chatfield)

FOR ASBESTOS AIR:
TYPE OF RESPIRATOR USED:_____

Metals-Total Conc.
[ ] Lead
[ ] RCRA Metals
[ ]_____
[ ]_____

Metals-Extract
[ ] TCLP / Lead
[ ] TCLP / RCRA Metals
[ ] TCLP / Full (w/ organics)
[ ]_____
[ ]_____

ORGANICS TESTS and other Analyses

NOTE: All samples for organics should be kept at 4°C from collection until testing. Schedule rush analyses in advance. Indicate preservatives added & media type.
Indicate *analysis method* for organics tests.

Organics				Wipes		Information for Air Samples					Organics					
Sample #	Date Sampled	Time Sampled	Sample Identification (e.g. Employee, SSN, Bldg, Material)	Wiped Area (ft²)	Type[1] A,B,P,E	Time[2] Start	Time[2] Stop	Flow Rate[3] Start	Flow Rate[3] Stop	Total[4] Air Vol	# con-tainers					

Sample Collection & Custody Information

[1]Type: A=area B=blank P=personal E=excursion [2]Beginning/End of Sample Period [3]Pump Calibration in Liters/Minute [4]Volume in Liters [time in min * flow in L/m

Sampled by [NAME]_____[SIGNATURE]_____[DATE/TIME]_____

Relinquished to lab by[NAME]_____[SIGNATURE]_____[DATE/TIME]_____

Received in lab by [NAME]_____[SIGNATURE]_____[DATE/TIME]_____

[ ]FX [ ]DHL [ ]UPS [ ]USM [ ]HD [ ]DB [ ]COURIER_____

Unusual Sample Condition Noted:_____ **WAYBILL #**

[ ] Sample return requested

[ ] Ambient temp [ ] Cool ____°C

[ ] pH ___ [ ] Cl ___ [ ]R [ ]S

Chain-of-Custody documentation continued internally within lab.

Attachment 4-C: Worksheet for Performing Mathematical Conversions for Dust Samples

Unit of Measurement	Symbol	Unit of Weight	Symbol
Inches	in	Micrograms	µg
Square inches	in^2	Micrograms per square foot	$µg/ft^2$
Feet	ft		
Square feet	ft^2		

1. Convert the sample area to square feet (ft^2)

If the area you sampled was not a square foot, you will need to convert it to this dimension. One foot equals 12 inches, and 1 square foot equals 144 square inches.

- Record the sample area in inches (in) as opposed to feet (ft).
- Convert the sample area to square inches (in^2). If you have a decimal, round the number to three decimal places.
- Divide the square inches by 144 to get square feet (ft^2). If you have a decimal, round the number to three decimal places.

Dimensions of sample area in inches (in)	Length: _____ in Width: _____ in
Multiply length times width to calculate the area in square inches (in^2)	_____ in × _____in = _____ in^2
Divide the area in square inches (in^2) by 144 to calculate the area in square feet (ft^2)	_____ in^2 ÷ 144 =_____ft^2

2. Convert the results to micrograms per square foot ($µg/ft^2$)

After you have converted the sample area to square feet, you need to find the amount of lead dust contained in that area. The micrograms per square foot ($µg/ft^2$) describe the quantity of lead dust contained in a 1 square-foot area.

- Divide the amount of lead (µg) by the area (ft^2).

Dimensions of sample area in square feet (ft^2)	Area = _____ ft^2
Quantity of lead in micrograms (µg)	Lead = _____ µg
Divide micrograms (µg) by square feet (ft^2) to calculate micrograms per square foot ($µg/ft^2$)	_____ µg ÷_____ ft^2 = _____ $µg/ft^2$

Attachment 4-D: Activity — Interpreting Laboratory Results

Instructions: The purpose of this activity is to test your ability to verify the results received from the laboratory, compare these results to the EPA dust clearance standards, and interpret the results. Using the following excerpt from a lead dust clearance test results form, check the laboratory's calculation of the weighted lead dust sample.

Sample #	Location	Surface	Dimensions of sample area (ft^2)	Total lead (µg)	µg/ ft^2
92-1	Upstairs bedroom	Floor	1.025	23	22.4
92-2	Upstairs bedroom	Interior windowsill	0.478	150	71.7
92-3	Kitchen, front window	Interior windowsill	0.544	260	477.9
92-4	Kitchen, side window	Window trough	0.928	97	90.0

1. Check the results (µg lead/ft^2) for each sample. If the results are incorrect, provide the correct results in µg lead/ft^2.

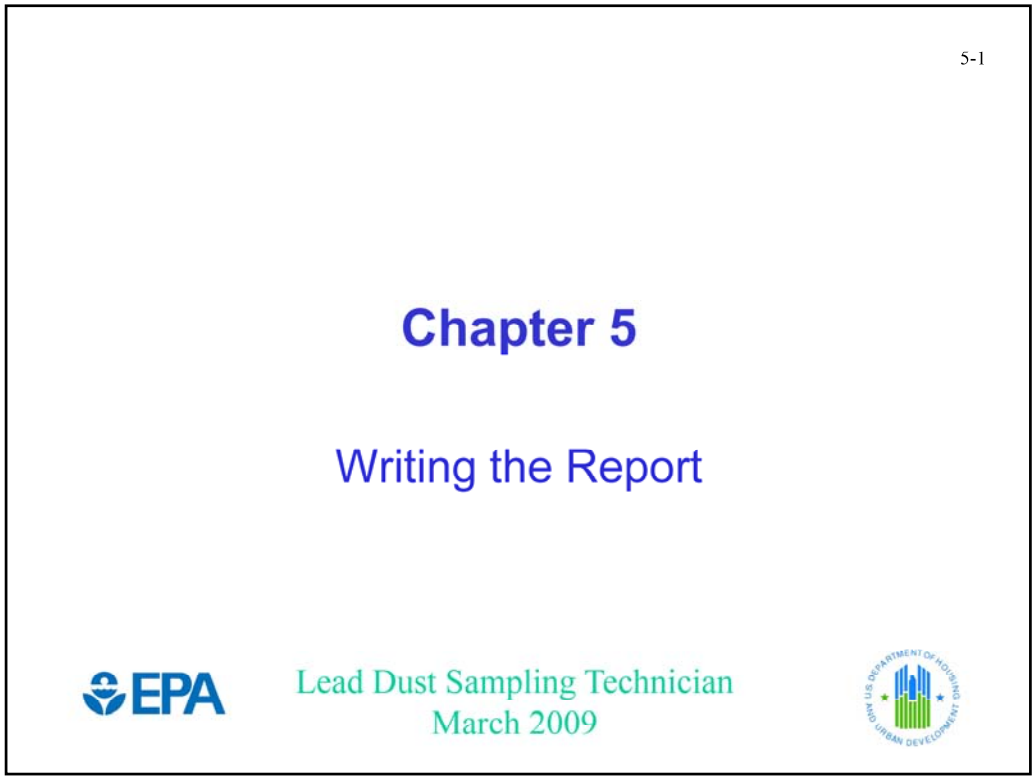
2. After verifying the laboratory's results, compare these results to the appropriate EPA lead dust clearance standard. Did the individual samples pass or fail the lead dust clearance test?

EPA Clearance Standards for Lead Dust

Floors: < 40 µg/ft^2
Interior windowsills: < 250 µg/ft^2
Window troughs: < 400 µg/ft^2

92-1: Result _____	Clearance Standard: _____	Pass or Fail? _____
92-2: Result _____	Clearance Standard: _____	Pass or Fail? _____
92-3: Result _____	Clearance Standard: _____	Pass or Fail? _____
92-4: Result _____	Clearance Standard: _____	Pass or Fail? _____

Chapter 5: Writing and Delivering the Report


5-1
Chapter 5
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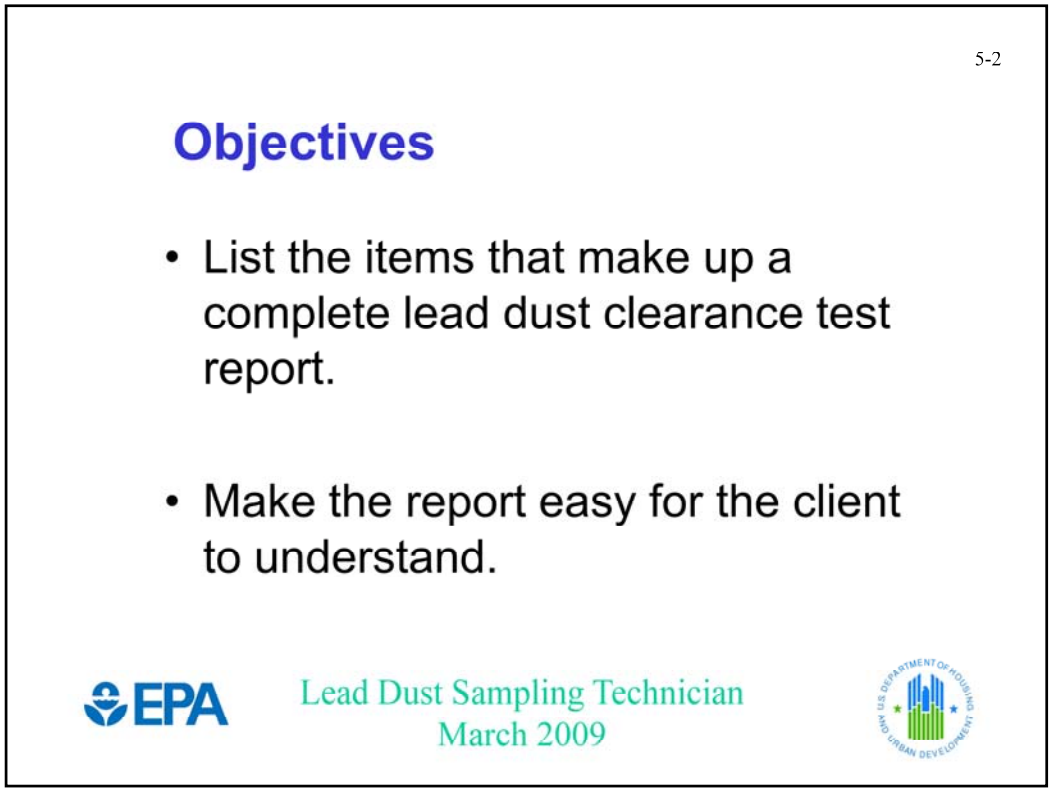
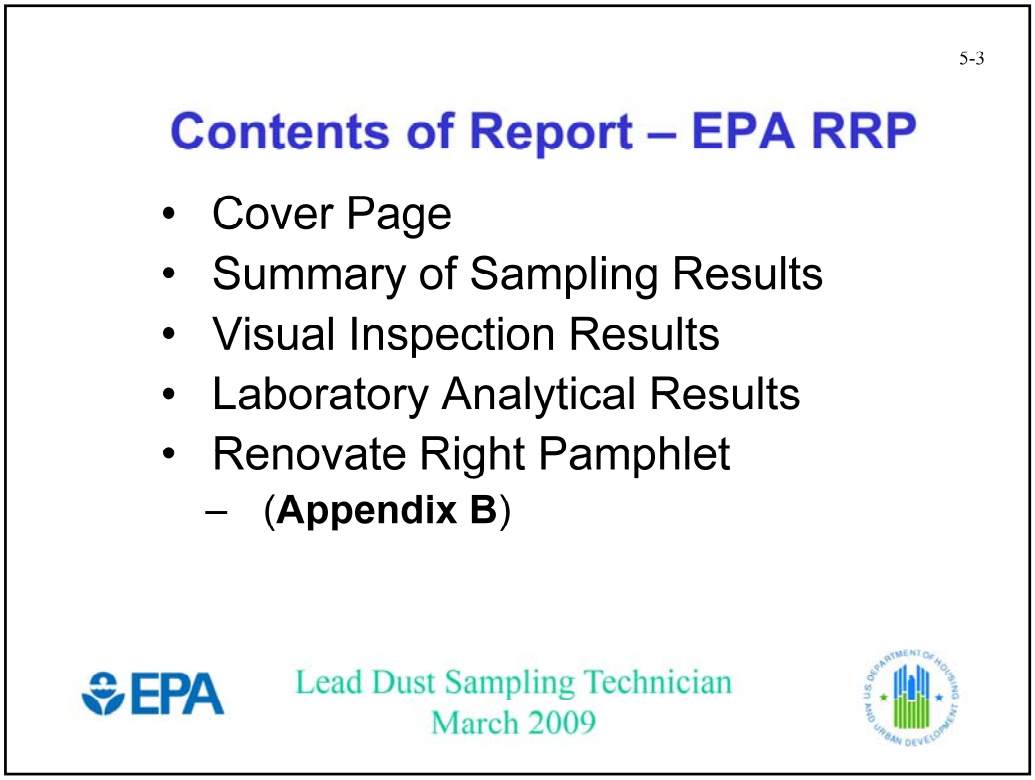


At the end of the chapter, students will be able to:

- List the key contents of a complete lead dust clearance test report
- Describe ways to make the report easy to read
- Respond appropriately to questions that clients may ask upon receiving their report



These are the six elements of the Lead Dust Clearance Test Report.

Blank forms that can be used for the Cover Page, Summary of Sampling Results, and Visual Inspection Results are provided in **Appendix B** of this course.

A copy of the *Renovate Right: Important Lead Hazard Information for Families, Child Care Providers and Schools* pamphlet is also included in **Appendix B.**

Contents of Report – HUD LSHR

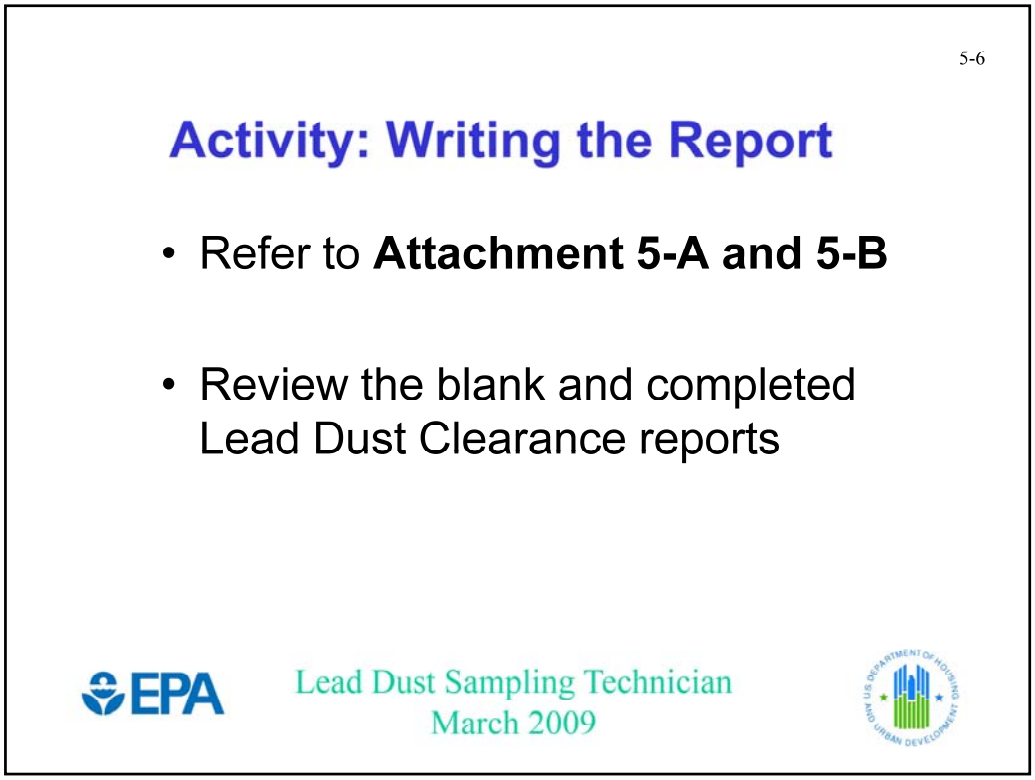
- Address of property and if multifamily, specific units and common areas affected
- Date of clearance exam
- Name, address and signature of person performing clearance including certification number
- Visual inspection results

Because HUD has more extensive visual inspections requirements, than does the EPA rule, HUD requires more information regarding the details of a lead dust clearance test report.

Contents of Report – HUD LSHR (Cont.)

- Dust sampling results
- Name and address of each laboratory that analyzed samples
- Start and completion dates of work performed
- Detailed written description of methods used during work and specific, detailed locations where work occurred
- If soil hazards are corrected, description of location.

Because HUD has more extensive visual inspections requirements, than does the EPA rule, HUD requires more information regarding the details of a lead dust clearance test report.


5-6
Activity: Writing the Report
• Refer to Attachment 5-A and 5-B
• Review the blank and completed Lead Dust Clearance reports
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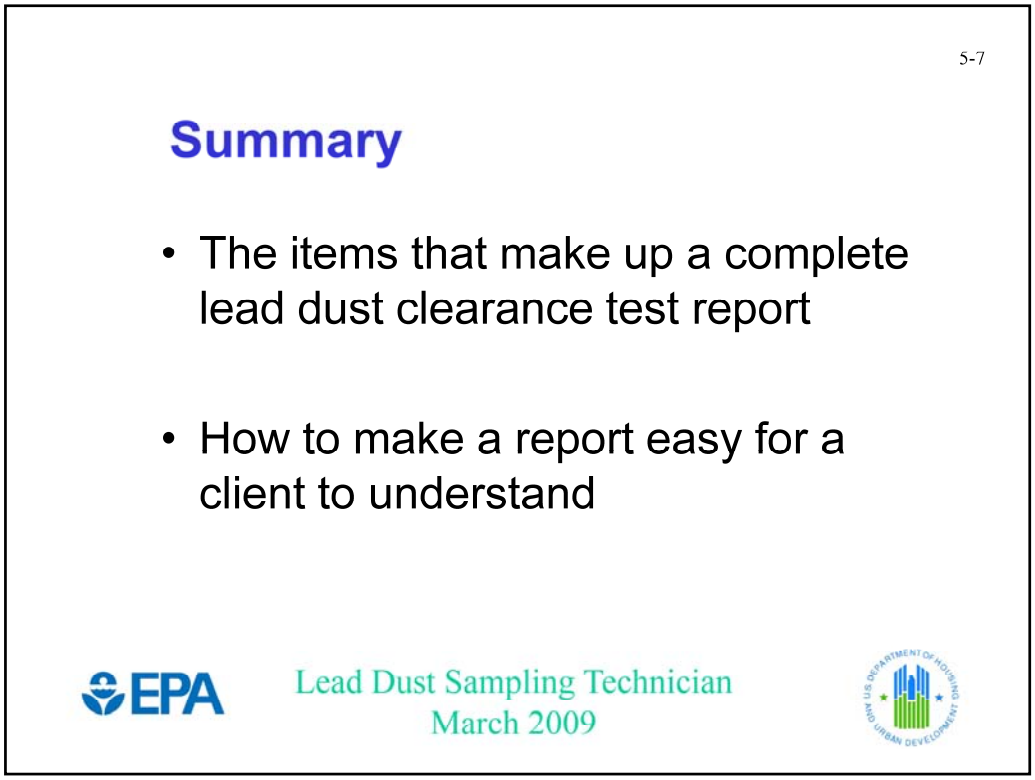
5-7
Summary
• The items that make up a complete lead dust clearance test report
• How to make a report easy for a client to understand
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Attachment 5-A: Sample Lead Dust Clearance Test Report

The following report is a sample lead dust clearance test report from a small HUD funded rehabilitation job (less than $5,000/unit) in a unit that involved window replacements in the small bedroom and kitchen of a single-family home that is available for rent. The lead dust clearance test report covers lead dust clearance testing of the worksite.

LEAD DUST CLEARANCE TEST REPORT
General Information

Date of Lead Dust Clearance Test:	8/5/09
Lead Dust Sampling Technician:	Jane White
Property Address:	80 East Main St. Hammond, IN 89898
Client Name and Address:	Smith Family 80 East Main St. Hammond, IN 89898
Laboratory Name and Address:	Analysis Services, Inc. 990 45th St., Suite 500 Gary, IN 44444
Telephone Number:	222-222-2222
NLLAP Number:	IN 999999

Summary of Lead Dust Clearance Test Results

This unit failed the lead dust clearance testing portion of the lead dust sampling examination. Areas represented by the failed samples should be re-cleaned.

Lead dust above HUD/EPA clearance standards was found in the following areas:

Location	Surface	µg lead/ft^2
Small bedroom	Side facing window (C-1)—windowsill	600
Small bedroom	Floor	200
Kitchen	Window above sink (A-1)-- windowsill	525

Signature: *Jane White*

Date: *8/12/09*

Summary of Hazard Reduction Activities

Name of Firm	ABC Renovations
Address of Firm	123 Main Street East Chicago, IN 12345
Supervisor Name	John Brown #1634
Supervisor Certification Number	1634
Start and Completion Date of Hazard Reduction or Completion Activity	8/4/09 to 8/5/09

Description of Hazard Reduction Activities and Areas Addressed:

Location	Activity
Kitchen	Replaced A-1 window with new, vinyl-clad window
2nd floor small bedroom	Replaced C-1 and C-2 windows with new, vinyl-clad windows

Description of work	The supervisor was present on the job site when work was being performed. Workers used lead-safe work practices. Plastic sheeting covered a 5-foot area on the ground outside under the windows being replaced and on the floor inside. Signs were posted at the doors to the bedroom and kitchen. Occupants were not allowed in the kitchen and bedroom and the outside work area during this activity. The window frame was misted prior to tear-out. After removal, workers wrapped the old windows in plastic sheeting and picked up debris on the plastic immediately and bagged it. The plastic sheeting was carefully gathered up and bagged for disposal. Workers replaced their disposable booties when leaving the work area for lunch and breaks. Respirators were not necessary. The new windows were installed and a clearance examination was requested.

Part I. VISUAL INSPECTION RESULTS FORM

Date of Lead Dust Sampling:	*8/5/09*
Lead Dust Sampling Technician:	*Jane White*
Client:	*Smith Family*
Property Address:	*80 East Main St.* *Hammond, IN 89898*

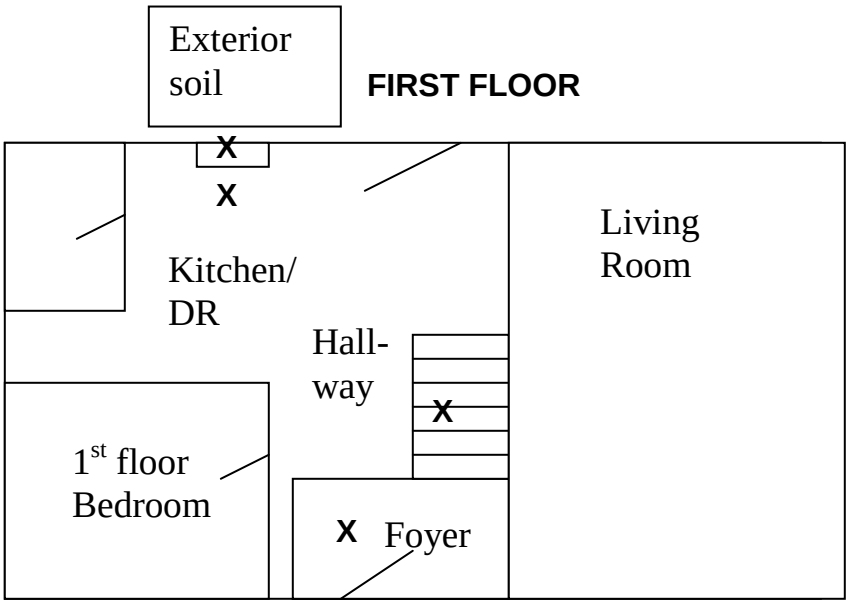
Visual Inspection of the Work Area

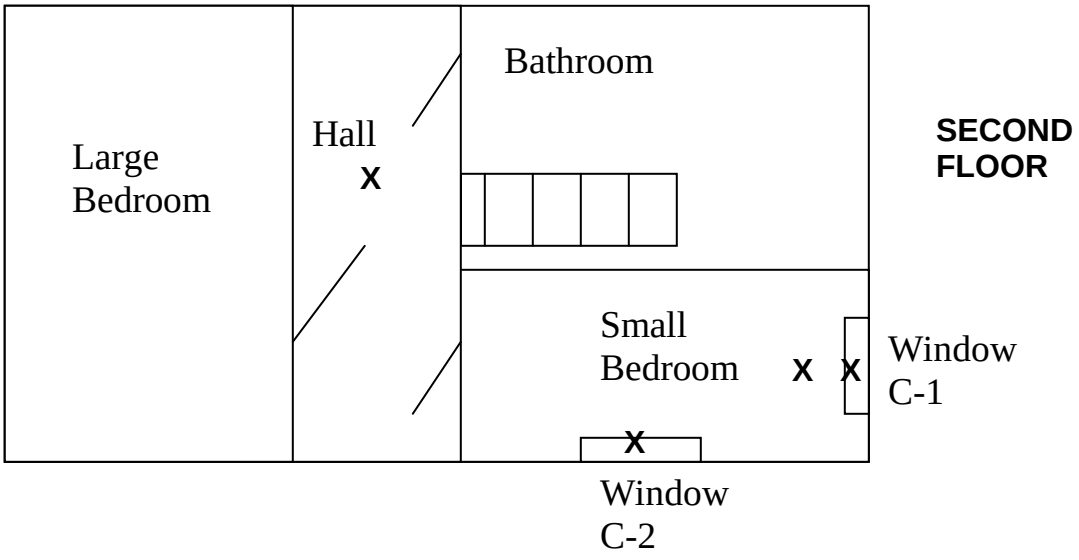
Work Area	Deteriorated Paint	Debris	Visible Dust	Notes	Pass/ Fail
Small bedroom					*Pass*
Kitchen					*Pass*
First floor hallway					*Pass*
Staircase					*Pass*
Second floor hallway					*Pass*
Exterior soil under kitchen window					*Pass*
Exterior soil under bedroom window					*Pass*

LEAD DUST CLEARANCE TEST RESULTS FORM

Date of Lead Dust Clearance Test:	*8/5/09*
Lead Dust Sampling Technician:	*Jane White*
Client:	*Smith Family*
Property Address:	*80 East Main St.* *Hammond, IN 89898*

Sample #	Location	Surface	Dimensions of sample area	µg Lead/ft^2	Pass/Fail
1-2	*Upstairs small bedroom*	*Front facing window (C-2)- windowsill*	*4" x 18"*	*17*	*Pass*
1-3	*Upstairs small bedroom*	*Floor under C-1 window*	*12" x 12"*	*200*	*Fail*
1-4	*Upstairs small bedroom*	*Side facing window (C-1)- windowsill*	*4" x 18"*	*600*	*Fail*
2-1	*Second floor hallway, 3 feet from newel post*	*Floor*	*12" x 12"*	*35*	*Pass*
3-1	*Staircase 5th step from bottom*	*Floor*	*12" x 12"*	*30*	*Pass*
4-1	*Kitchen*	*Floor under A-1 window*	*12" x 12"*	*12*	*Pass*
4-2	*Kitchen*	*Window above sink (A-1)- windowsill*	*4" x 18"*	*525*	*Fail*
5-1	*First floor, entry foyer, 2 feet inside front door*	*Floor*	*12" x 12"*	*30*	*Pass*


Exterior soil
FIRST FLOOR
X = sample locations
X
X
Kitchen/ DR
Living Room
Hall- way
X
1st floor Bedroom
X
Foyer


Large Bedroom
Hall
X
Bathroom
SECOND FLOOR
Small Bedroom
X
X
Window C-1
X
Window C-2

Understanding Your Report

1. The Summary Results section lists all of the areas that failed the lead dust clearance test. The areas represented by the sample needs to be re-cleaned to see if the cleaning removed the contaminated dust. Deteriorated painted surfaces should be repaired using interim controls or abatement techniques.

   For written information on how to address lead hazards, call the National Lead Information Center Clearinghouse at 1-800-424-Lead (1-800-424-5323). You may consider hiring a risk assessor to evaluate lead hazards in your home and recommend a lead hazard control plan. Risk assessors can be located through the Lead listing at 1-888-Leadlist (1-888-532-3547).

2. The laboratory result forms attached to the report list the analyst, all of the areas sampled inside and outside the building and the laboratory analysis results for each sample.

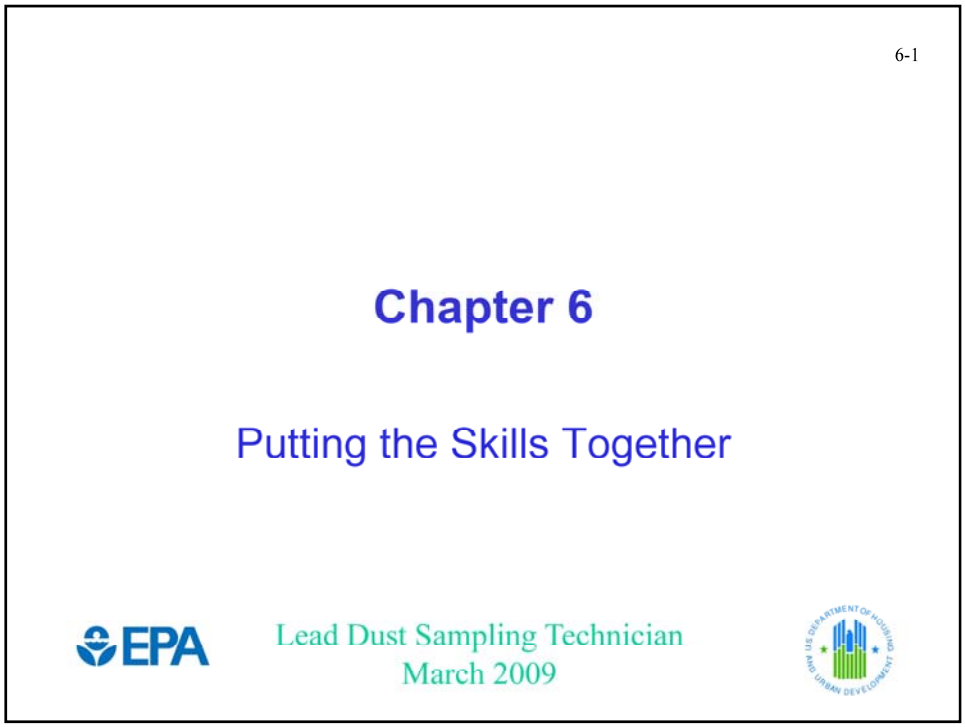
3. The lead dust clearance test results are expressed in micrograms per square foot ($\mu g/ft^2$); soil samples are expressed in micrograms per gram ($\mu g/g$).

4. Areas that failed the lead dust clearance test showed dust lead levels above EPA clearance standards for lead dust. The guidance that was used during this lead dust clearance test is as follows:

EPA Clearance Standards for Lead Dust

Carpeted and uncarpeted floors: $< 40\ \mu g/ft^2$
Interior window sill (stool): $< 250\ \mu g/ft^2$
Window trough: $< 400\ \mu g/ft^2$

Chapter 6: Putting the Skills Together


6-1
Chapter 6
Putting the Skills Together
EPA
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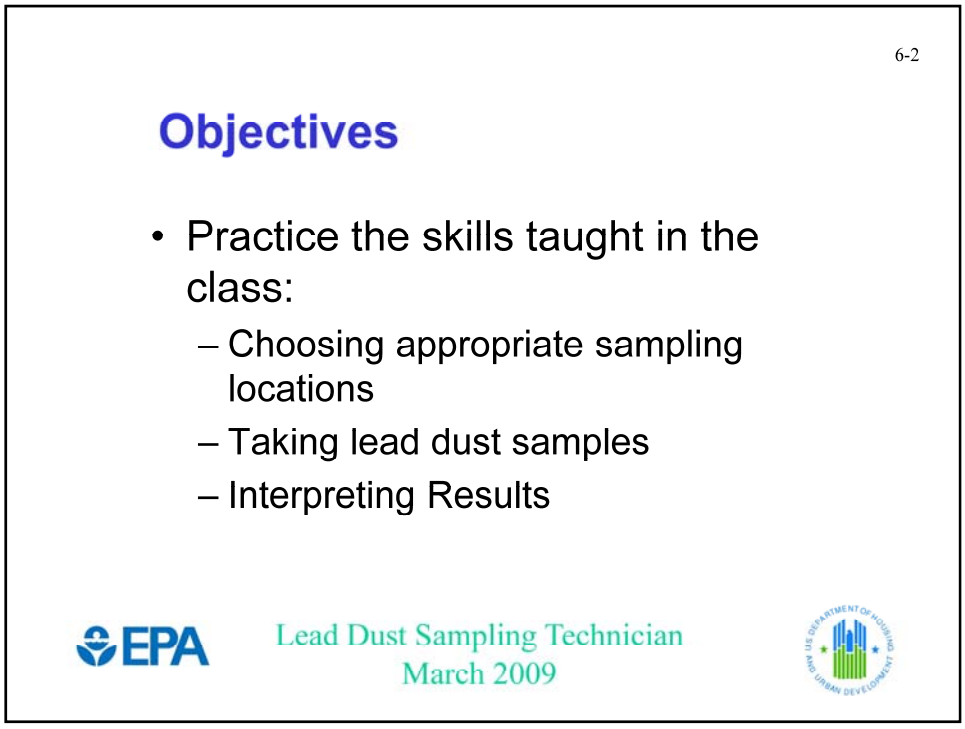
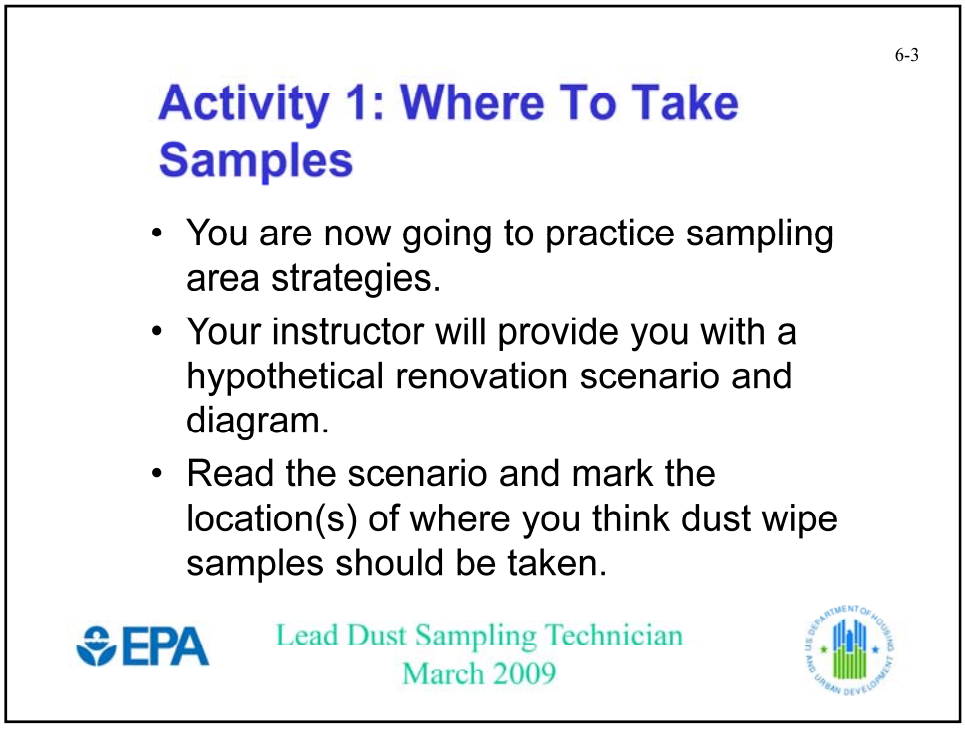
March 2009



This chapter will outline the steps a lead dust sampling technician must take from start to finish when conducting an examination. This chapter includes five activities to help practice implementing the protocols.

By the end of this chapter, students will be able to demonstrate that they can:

- Choose appropriate sampling locations
- Take lead dust samples
- Interpret Results


6-3
Activity 1: Where To Take Samples
• You are now going to practice sampling area strategies.
• Your instructor will provide you with a hypothetical renovation scenario and diagram.
• Read the scenario and mark the location(s) of where you think dust wipe samples should be taken.
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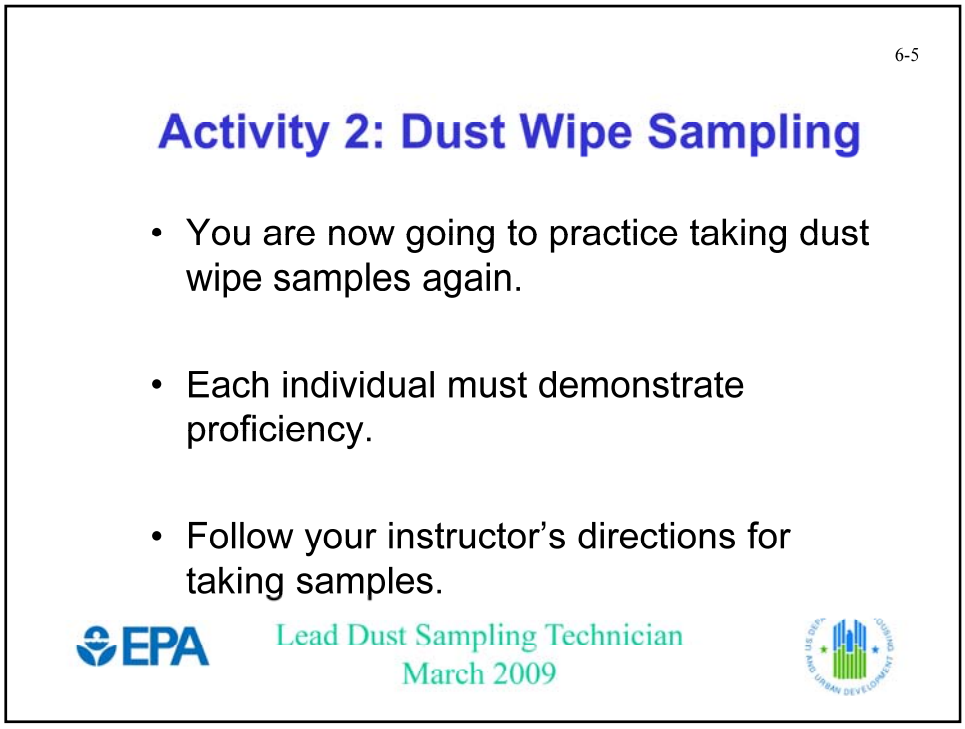
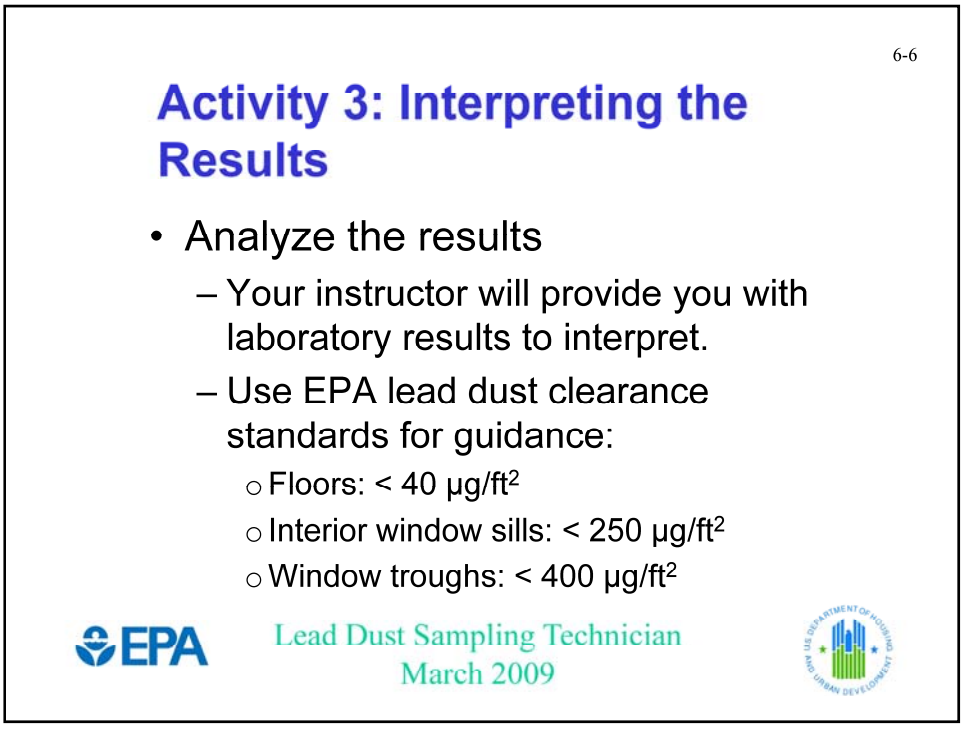
Lead Dust Sampling Technician
March 2009

Remember…

- Be strategic about laying out sampling area to capture areas were the highest dust generating tasks occurred during the job.
- Refer to the *Field Guide* or Chapter 3 to determine the appropriate places to take your samples.



Activity 2: Now that the sampling locations have been determined, you will take samples on a variety of surfaces – windowsills, troughs, and floors.



Results and Report Writing

When analyzing the data, follow the guidelines provided in **Chapter 4.**

Use the EPA/HUD lead dust clearance standards when evaluating sample results.

Attachment A
Activity 1: Where to Take Samples for Renovated Areas

A homeowner renovated her house and she chose, under the EPA RRP regulation, to have clearance conducted in her home, instead of cleaning verification. This language was inserted in the contract at the beginning of the project. After reading the description about each type of renovation performed, decide where and whether or not samples should be taken inside the house by marking an "X" on the floor plan (see floor plan on following page).

1. The kitchen cabinets were replaced. Next to the cabinets, a stove and the 18-inch-square metal wall plate that held the exhaust vent for the stove were removed. A plastic barrier was hung between the kitchen and the hallway during this project.
2. In an effort to have a more energy-efficient house, both windows in bedroom 2 were replaced with triple-paned, argon-gas windows. The contractor erected a barrier at the existing doorway to the bedroom.
3. The homeowner's company decided its employees could reduce both fuel costs and pollution by allowing them to work from home more often. As a result, the homeowner needed to create an office space. She decided to split her spacious upstairs bedroom into a smaller bedroom and an office. She had a wall constructed in the middle to divide the room. The original bedroom door was removed and two new doors were installed to allow access into each room. A window was installed in the office. The renovator considered both new rooms as a single work area and only erected a barrier between the bedroom/office and the hall.
4. The bathroom floor, original since the house was built in the 1960s, was replaced with new ceramic tile. Both the existing floor and the existing walls were ceramic tile.

Activity 1: Where to Take Samples for Renovated Areas in HUD-Funded Projects

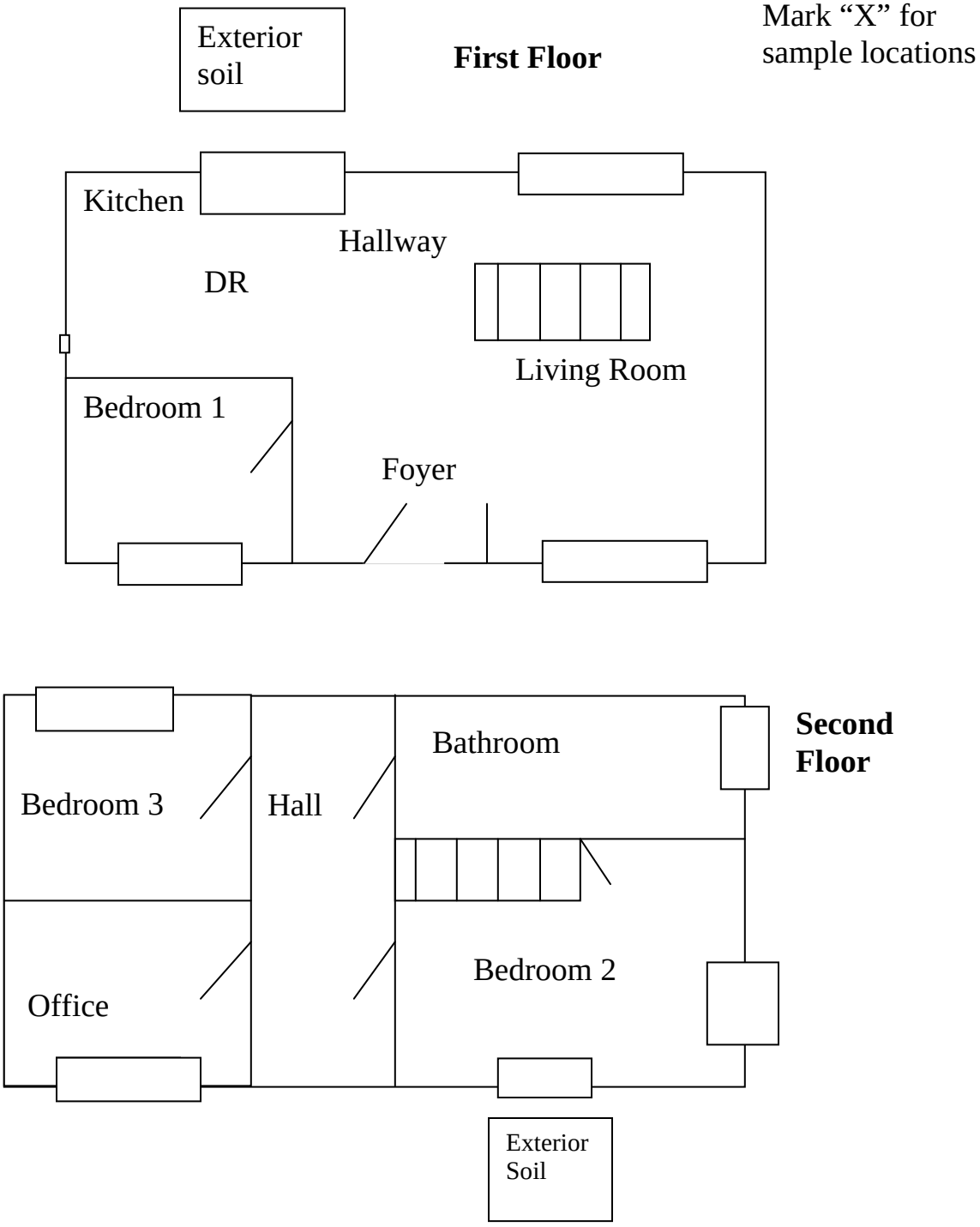
Scenario: A homeowner received Federal rehabilitation assistance (less than $5,000) to renovate specific areas of her house. After reading the description about each type of renovation performed, decide where and whether or not samples should be taken inside the house by marking an "X" on the floor plan (see floor plan on following page).

1. The kitchen cabinets were replaced. Next to the cabinets, a stove and the 18-inch-square metal wall plate that held the exhaust vent for the stove were removed. A plastic barrier was hung between the kitchen and the hallway during this project.

2. The two windows in Bedroom 2 had their sashes replaced with triple-paned, argon-gas-filled sashes. The sashes were replaced from the inside and plastic was hung on the outside of the windows. The contractor erected a barrier over the existing doorway to the bedroom. (Note that this work scope differs from the scope in the EPA example.)

3. The homeowner's company decided its employees could reduce both fuel costs and pollution by allowing them to work from home more often. As a result, the homeowner needed to create an office space. She decided to split her spacious upstairs bedroom into a smaller bedroom and an office. She had a wall constructed in the middle to divide the room. The original bedroom door was removed and two new doors were installed to allow access into each room. A window was installed in the office. The renovator considered both new rooms as a single work area and only erected a barrier between the bedroom/office and the hall.

4. The bathroom floor, original since the house was built in the 1960s, was replaced with new ceramic tile. Both the existing floor and the existing walls were ceramic tile.


Exterior soil
First Floor
Mark "X" for sample locations
Kitchen
Hallway
DR
Living Room
Bedroom 1
Foyer
Bedroom 3
Hall
Bathroom
Second Floor
Office
Bedroom 2
Exterior Soil

Attachment 6-B

Activity 3 — Interpreting Laboratory Results

Instructions: The purpose of this activity is to test your ability to verify the results received from the laboratory, compare these results to the EPA/HUD dust clearance standards, and interpret the results. Using the following excerpt from a lead dust clearance test results form, check the laboratory's calculation of the weighted lead dust sample.

Sample #	Location	Surface	Dimensions of Sample Area (ft^2)	Total Lead (µg)	µg/ft^2
X-1	Kitchen	Floor	1.070	40	42.8
X-2	Kitchen	Interior windowsill	0.969	323	333.3
X-3	Kitchen	Window trough	0.526	210	400
X-4	Hallway	Floor	1.107	30	27.1
X-5	Bedroom 2	Floor	0.988	50	50.6
X-6	Hall	Floor	1.107	26	23.5
X-7	Bedroom 3	Floor	1.094	47	43.0
X-8	Office	Floor	1.094	192	17.5
X-9	Bedroom 3	Interior windowsill	0.88	412	468.1
X-10	Bedroom 3	Interior trough	0.67	111	165.7
X-11	Hall	Floor	1.107	900	813.0
X-12	Office	Interior windowsill	0.88	70	795.5
X-13	Office	Interior trough	0.76	12	15.8

1. Check the results (µg lead/ft²) for each sample. If the results are incorrect, provide the correct results in µg lead/ft².

2. After verifying the laboratory's results, compare these results to the appropriate EPA lead dust clearance standard. Did the individual samples pass or fail the lead dust clearance test?

EPA/HUD Clearance Standards for Lead Dust
Floors: 40 µg/ft²
Interior windowsills: 250 µg/ft²
Window troughs: 400 µg/ft²

Sample	**Clearance Standard:**	**Pass or Fail?**
X-1: Result		
X-2: Result		
X-3: Result		
X-4: Result		
X-5: Result		
X-6: Result		
X-7: Result		
X-8: Result		
X-9: Result		
X-10: Result		
X-11: Result		
X-12: Result		
X-13: Result		

Activity 3: Interpreting Laboratory Results In HUD-Funded Project

Instructions: The purpose of this activity is to test your ability to verify the results received from the laboratory, compare these results to EPA/HUD dust clearance standards, and interpret the results. Using the following excerpt from a lead dust clearance test results form, check the laboratory's calculation of the dust lead loading. (Note: To keep the exercise within the class time available, just the first 13 samples in the lab report are shown.)

Sample #	Location	Surface	Dimensions of Sample Area (ft^2)	Total Lead (µg)	µg/ft^2
X-1	Kitchen	Floor	1.070	40	42.8
X-2	Kitchen	Interior windowsill	0.969	323	333.3
X-3	Kitchen	Window trough	0.525	210	400.0
X-4	Hallway	Floor	1.107	30	27.1
X-5	Bedroom 2	Floor	0.988	50	50.6
X-6	Bedroom 2	Interior Windowsill	0.898	289	321.82
X-7	Bedroom 2	Interior trough	0.775	154	198.7
X-8	Hall	Floor	1.107	26	23.5
X-9	Bedroom 3	Floor	1.094	47	43.0
X-10	Office	Floor	1.094	192	17.5
X-11	Bedroom 3	Interior windowsill	0.88	412	468.1
X-12	Bedroom 3	Interior trough	0.67	111	165.7
X-13	Hall	Floor	1.107	900	813.0

1. Check the results (µg lead/ft²) for each sample. If the results are incorrect, provide the correct results in µg lead/ft².

2. After verifying the laboratory's results, compare these results to the appropriate EPA recommended guidance. Did the individual samples pass or fail the lead dust clearance test?

EPA/HUD Clearance Standards for Lead Dust

Floors: 40 µg/ft²

Interior windowsills: 250 µg/ft²

Window troughs: 400 µg/ft²

X-1: Result:	Clearance Standard:	Pass or Fail?
X-2: Result:	Clearance Standard:	Pass or Fail?
X-3: Result:	Clearance Standard:	Pass or Fail?
X-4: Result:	Clearance Standard:	Pass or Fail?
X-5: Result:	Clearance Standard:	Pass or Fail?
X-6: Result:	Clearance Standard:	Pass or Fail?
X-7: Result:	Clearance Standard:	Pass or Fail?
X-8: Result:	Clearance Standard:	Pass or Fail?
X-9: Result:	Clearance Standard:	Pass or Fail?
X-10: Result:	Clearance Standard:	Pass or Fail?
X-11: Result:	Clearance Standard:	Pass or Fail?
X-12: Result:	Clearance Standard:	Pass or Fail?
X-13: Result:	Clearance Standard:	Pass or Fail?

Appendix A:

Excerpt from EPA Final Renovation, Repair, and Painting Rule

Appendix A: Excerpt from EPA Final Rule: Renovation, Repair, and Painting Rule

To see the entire rule go to http://www.epa.gov/fedrgstr/EPA-TOX/2008/April/Day-22/t8141.pdf.

ENVIRONMENTAL PROTECTION AGENCY
40 CFR Part 745 [EPA–HQ–OPPT–2005–0049; FRL–8355–7] RIN 2070–AC83
Lead; Renovation, Repair, and Painting Program
AGENCY: Environmental Protection Agency (EPA).
ACTION: Final rule.
SUMMARY: EPA is issuing a final rule under the authority of section 402(c)(3) of the Toxic Substances Control Act (TSCA) to address lead-based paint hazards created by renovation, repair, and painting activities that disturb lead-based paint in target housing and child-occupied facilities. ‘‘Target housing’’ is defined in TSCA section 401 as any housing constructed before 1978, except housing for the elderly or persons with disabilities (unless any child under age 6 resides or is expected to reside in such housing) or any 0-bedroom dwelling. Under this rule, a child-occupied facility is a building, or a portion of a building, constructed prior to 1978, visited regularly by the same child, under 6 years of age, on at least two different days within any week (Sunday through Saturday period), provided that each day’s visit lasts at least 3 hours and the combined weekly visits last at least 6 hours, and the combined annual visits last at least 60 hours. Child-occupied facilities may be located in public or commercial buildings or in target housing. This rule establishes requirements for training renovators, other renovation workers, and dust sampling technicians; for certifying renovators, dust sampling technicians, and renovation firms; for accrediting providers of renovation and dust sampling technician training; for renovation work practices; and for recordkeeping. Interested States, Territories, and Indian Tribes may apply for and receive authorization to administer and enforce all of the elements of these new renovation requirements.

§ 745.85 Work practice standards.

(c) *Optional dust clearance testing*. Cleaning verification need not be performed if the contract between the renovation firm and the person contracting for the renovation or another Federal, State, Territorial, Tribal, or local law or regulation requires:

(1) The renovation firm to perform dust clearance sampling at the conclusion of a renovation covered by this subpart.

(2) The dust clearance samples are required to be collected by a certified inspector, risk assessor or dust sampling technician.

(3) The renovation firm is required to re-clean the work area until the dust clearance sample results are below the clearance standards in §745.227(e)(8) or any applicable State, Territorial, Tribal, or local standard.

§ 745.90 Renovator certification and dust sampling technician certification.

(a) *Renovator certification and dust sampling technician certification*. (1) To become a certified renovator or certified dust sampling technician, an individual must successfully complete the appropriate course accredited by EPA under § 745.225 or by a State or Tribal program that is authorized under subpart Q of this part. The course completion certificate serves as proof of certification. EPA renovator certification allows the certified individual to perform renovations covered by this section in any State or Indian Tribal area that does not have a renovation program that is authorized under subpart Q of this part. EPA dust sampling technician certification allows the certified individual to perform dust clearance sampling under § 745.85(c) in any State or Indian Tribal area that does not have a renovation program that is authorized under subpart Q of this part.

(2) Individuals who have successfully completed an accredited abatement worker or supervisor course, or individuals who have successfully completed an EPA, HUD, or EPA/HUD model renovation training course may take an accredited refresher renovator training course in lieu of the initial renovator training course to become a certified renovator.

(3) Individuals who have successfully completed an accredited lead-based paint inspector or risk assessor course may take an accredited refresher dust sampling technician course in lieu of the initial training to become a certified dust sampling technician.

(4) To maintain renovator certification or dust sampling technician certification, an individual must complete a renovator or dust sampling technician refresher course accredited by EPA under § 745.225 or by a State or Tribal program that is authorized under subpart Q of this part within 5 years of the date the individual completed the initial course described in paragraph (a)(1) of this section. If the individual does not complete a refresher course within this time, the individual must re-take the initial course to become certified again.

(b) *Renovator responsibilities*. Certified renovators are responsible for ensuring compliance with § 745.85 at all renovations to which they are assigned. A certified renovator:

(1) Must perform all of the tasks described in § 745.85(b) and must either perform or direct workers who perform all of the tasks described in § 745.85(a).

(2) Must provide training to workers on the work practices they will be using in performing their assigned tasks.

(3) Must be physically present at the work site when the signs required by § 745.85(a)(1) are posted, while the work area containment required by § 745.85(a)(2) is being established, and while the work area cleaning required by § 745.85(a)(5) is performed.

(4) Must regularly direct work being performed by other individuals to ensure that the work practices are being followed, including maintaining the integrity of the containment barriers and ensuring that dust or debris does not spread beyond the work area.

(5) Must be available, either on-site or by telephone, at all times that renovations are being conducted.

(6) When requested by the party contracting for renovation services, must use an acceptable test kit to determine whether components to be affected by the renovation contain lead-based paint.

(7) Must have with them at the work site copies of their initial course completion certificate and their most recent refresher course completion certificate.

(8) Must prepare the records required by § 745.86(b)(7).

(c) *Dust sampling technician responsibilities*. When performing optional dust clearance sampling under § 745.85(c), a certified dust sampling technician:

(1) Must collect dust samples in accordance with § 745.227(e)(8), must send the collected samples to a laboratory recognized by EPA under TSCA section 405(b), and must compare the results to the clearance levels in accordance with § 745.227(e)(8).

(2) Must have with them at the work site copies of their initial course completion certificate and their most recent refresher course completion certificate.

Appendix B:

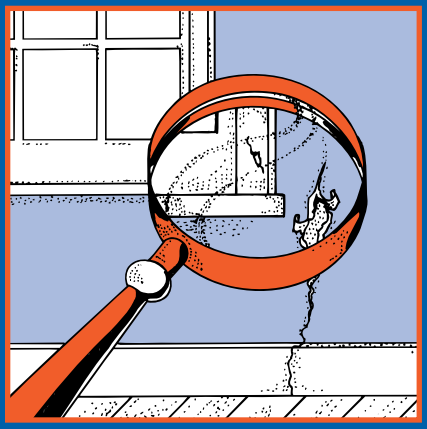
Protect Your Family from Lead in Your Home Pamphlet

Simple Steps To Protect Your Family From Lead Hazards

If you think your home has high levels of lead:

- Get your young children tested for lead, even if they seem healthy.
- Wash children's hands, bottles, pacifiers, and toys often.
- Make sure children eat healthy, low-fat foods.
- Get your home checked for lead hazards.
- Regularly clean floors, window sills, and other surfaces.
- Wipe soil off shoes before entering house.
- Talk to your landlord about fixing surfaces with peeling or chipping paint.
- Take precautions to avoid exposure to lead dust when remodeling or renovating (call 1-800-424-LEAD for guidelines).
- Don't use a belt-sander, propane torch, high temperature heat gun, scraper, or sandpaper on painted surfaces that may contain lead.
- Don't try to remove lead-based paint yourself.

Recycled/Recyclable
Printed with vegetable oil based inks on recycled paper (minimum 50% postconsumer) process chlorine free.



Protect Your Family From Lead In Your Home

United States Environmental Protection Agency

United States Consumer Product Safety Commission

United States Department of Housing and Urban Development

Are You Planning To Buy, Rent, or Renovate a Home Built Before 1978?

Many houses and apartments built before 1978 have paint that contains high levels of lead (called lead-based paint). Lead from paint, chips, and dust can pose serious health hazards if not taken care of properly.

OWNERS, BUYERS, and RENTERS are encouraged to check for lead (see page 6) before renting, buying or renovating pre-1978 housing.

Federal law requires that individuals receive certain information before renting, buying, or renovating pre-1978 housing:

LANDLORDS have to disclose known information on lead-based paint and lead-based paint hazards before leases take effect. Leases must include a disclosure about lead-based paint.

SELLERS have to disclose known information on lead-based paint and lead-based paint hazards before selling a house. Sales contracts must include a disclosure about lead-based paint. Buyers have up to 10 days to check for lead.

RENOVATORS disturbing more than 2 square feet of painted surfaces have to give you this pamphlet before starting work.

IMPORTANT!

Lead From Paint, Dust, and Soil Can Be Dangerous If Not Managed Properly

FACT: Lead exposure can harm young children and babies even before they are born.

FACT: Even children who seem healthy can have high levels of lead in their bodies.

FACT: People can get lead in their bodies by breathing or swallowing lead dust, or by eating soil or paint chips containing lead.

FACT: People have many options for reducing lead hazards. In most cases, lead-based paint that is in good condition is not a hazard.

FACT: Removing lead-based paint improperly can increase the danger to your family.

If you think your home might have lead hazards, read this pamphlet to learn some simple steps to protect your family.

Lead Gets in the Body in Many Ways

Childhood lead poisoning remains a major environmental health problem in the U.S.

Even children who appear healthy can have dangerous levels of lead in their bodies.

People can get lead in their body if they:

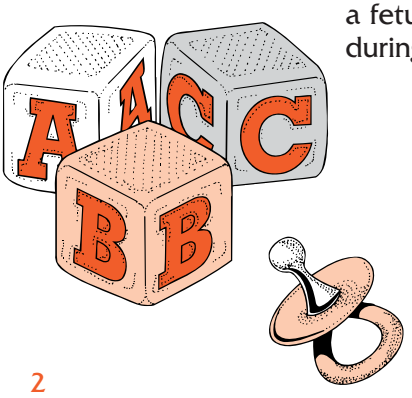
- Breathe in lead dust (especially during renovations that disturb painted surfaces).
- Put their hands or other objects covered with lead dust in their mouths.
- Eat paint chips or soil that contains lead.

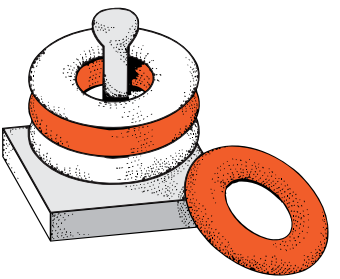
Lead is even more dangerous to children under the age of 6:

- At this age children's brains and nervous systems are more sensitive to the damaging effects of lead.
- Children's growing bodies absorb more lead.
- Babies and young children often put their hands and other objects in their mouths. These objects can have lead dust on them.

Lead is also dangerous to women of childbearing age:

- Women with a high lead level in their system prior to pregnancy would expose a fetus to lead through the placenta during fetal development.





Lead's Effects

It is important to know that even exposure to low levels of lead can severely harm children.

In children, lead can cause:

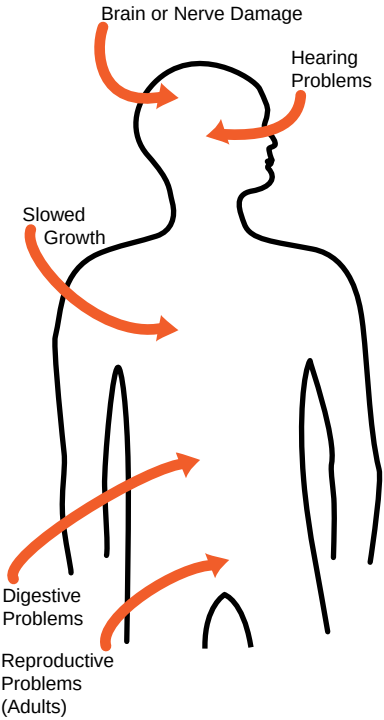
- Nervous system and kidney damage.
- Learning disabilities, attention deficit disorder, and decreased intelligence.
- Speech, language, and behavior problems.
- Poor muscle coordination.
- Decreased muscle and bone growth.
- Hearing damage.

While low-lead exposure is most common, exposure to high levels of lead can have devastating effects on children, including seizures, unconsciousness, and, in some cases, death.

Although children are especially susceptible to lead exposure, lead can be dangerous for adults too.

In adults, lead can cause:

- Increased chance of illness during pregnancy.
- Harm to a fetus, including brain damage or death.
- Fertility problems (in men and women).
- High blood pressure.
- Digestive problems.
- Nerve disorders.
- Memory and concentration problems.
- Muscle and joint pain.



Lead affects the body in many ways.

Where Lead-Based Paint Is Found

In general, the older your home, the more likely it has lead-based paint.

Many homes built before 1978 have lead-based paint. The federal government banned lead-based paint from housing in 1978. Some states stopped its use even earlier. Lead can be found:

- In homes in the city, country, or suburbs.
- In apartments, single-family homes, and both private and public housing.
- Inside and outside of the house.
- In soil around a home. (Soil can pick up lead from exterior paint or other sources such as past use of leaded gas in cars.)

Checking Your Family for Lead

Get your children and home tested if you think your home has high levels of lead.

To reduce your child's exposure to lead, get your child checked, have your home tested (especially if your home has paint in poor condition and was built before 1978), and fix any hazards you may have. Children's blood lead levels tend to increase rapidly from 6 to 12 months of age, and tend to peak at 18 to 24 months of age.

Consult your doctor for advice on testing your children. A simple blood test can detect high levels of lead. Blood tests are usually recommended for:

- Children at ages 1 and 2.
- Children or other family members who have been exposed to high levels of lead.
- Children who should be tested under your state or local health screening plan.

Your doctor can explain what the test results mean and if more testing will be needed.

Identifying Lead Hazards

Lead-based paint is usually not a hazard if it is in good condition, and it is not on an impact or friction surface, like a window. It is defined by the federal government as paint with lead levels greater than or equal to 1.0 milligram per square centimeter, or more than 0.5% by weight.

Deteriorating lead-based paint (peeling, chipping, chalking, cracking or damaged) is a hazard and needs immediate attention. It may also be a hazard when found on surfaces that children can chew or that get a lot of wear-and-tear, such as:

- Windows and window sills.
- Doors and door frames.
- Stairs, railings, banisters, and porches.

Lead from paint chips, which you can see, and lead dust, which you can't always see, can both be serious hazards.

Lead dust can form when lead-based paint is scraped, sanded, or heated. Dust also forms when painted surfaces bump or rub together. Lead chips and dust can get on surfaces and objects that people touch. Settled lead dust can re-enter the air when people vacuum, sweep, or walk through it. The following two federal standards have been set for lead hazards in dust:

- 40 micrograms per square foot ($\mu g/ft^2$) and higher for floors, including carpeted floors.
- 250 $\mu g/ft^2$ and higher for interior window sills.

Lead in soil can be a hazard when children play in bare soil or when people bring soil into the house on their shoes. The following two federal standards have been set for lead hazards in residential soil:

- 400 parts per million (ppm) and higher in play areas of bare soil.
- 1,200 ppm (average) and higher in bare soil in the remainder of the yard.

The only way to find out if paint, dust and soil lead hazards exist is to test for them. The next page describes the most common methods used.

Checking Your Home for Lead

Just knowing that a home has lead-based paint may not tell you if there is a hazard.

You can get your home tested for lead in several different ways:

- A paint **inspection** tells you whether your home has lead-based paint and where it is located. It won't tell you whether or not your home currently has lead hazards.
- A **risk assessment** tells you if your home currently has any lead hazards from lead in paint, dust, or soil. It also tells you what actions to take to address any hazards.
- A combination risk assessment and inspection tells you if your home has any lead hazards and if your home has any lead-based paint, and where the lead-based paint is located.

Hire a trained and certified testing professional who will use a range of reliable methods when testing your home.

- Visual inspection of paint condition and location.
- A portable x-ray fluorescence (XRF) machine.
- Lab tests of paint, dust, and soil samples.

There are state and federal programs in place to ensure that testing is done safely, reliably, and effectively. Contact your state or local agency (see bottom of page 11) for more information, or call **1-800-424-LEAD (5323)** for a list of contacts in your area.

Home test kits for lead are available, but may not always be accurate. Consumers should not rely on these kits before doing renovations or to assure safety.

What You Can Do Now To Protect Your Family

If you suspect that your house has lead hazards, you can take some immediate steps to reduce your family's risk:

- **If you rent, notify your landlord of peeling or chipping paint.**
- **Clean up paint chips immediately.**
- **Clean floors, window frames, window sills, and other surfaces weekly**. Use a mop or sponge with warm water and a general all-purpose cleaner or a cleaner made specifically for lead. REMEMBER: NEVER MIX AMMONIA AND BLEACH PRODUCTS TOGETHER SINCE THEY CAN FORM A DANGEROUS GAS.

- **Thoroughly rinse sponges and mop heads after cleaning dirty or dusty areas**.
- **Wash children's hands often, especially before they eat and before nap time and bed time.**
- **Keep play areas clean.** Wash bottles, pacifiers, toys, and stuffed animals regularly.
- **Keep children from chewing window sills or other painted surfaces.**
- **Clean or remove shoes before entering your home to avoid tracking in lead from soil.**
- **Make sure children eat nutritious, low-fat meals high in iron and calcium,** such as spinach and dairy products. Children with good diets absorb less lead.

Reducing Lead Hazards In The Home

Removing lead improperly can increase the hazard to your family by spreading even more lead dust around the house.

Always use a professional who is trained to remove lead hazards safely.

In addition to day-to-day cleaning and good nutrition:

- You can **temporarily** reduce lead hazards by taking actions such as repairing damaged painted surfaces and planting grass to cover soil with high lead levels. These actions (called "interim controls") are not permanent solutions and will need ongoing attention.
- To **permanently** remove lead hazards, you should hire a certified lead "abatement" contractor. Abatement (or permanent hazard elimination) methods include removing, sealing, or enclosing lead-based paint with special materials. Just painting over the hazard with regular paint is not permanent removal.

Always hire a person with special training for correcting lead problems—someone who knows how to do this work safely and has the proper equipment to clean up thoroughly. Certified contractors will employ qualified workers and follow strict safety rules as set by their state or by the federal government.

Once the work is completed, dust cleanup activities must be repeated until testing indicates that lead dust levels are below the following:

- 40 micrograms per square foot ($\mu g/ft^2$) for floors, including carpeted floors;
- 250 $\mu g/ft^2$ for interior windows sills; and
- 400 $\mu g/ft^2$ for window troughs.

Call your state or local agency (see bottom of page 11) for help in locating certified professionals in your area and to see if financial assistance is available.

Remodeling or Renovating a Home With Lead-Based Paint

Take precautions before your contractor or you begin remodeling or renovating anything that disturbs painted surfaces (such as scraping off paint or tearing out walls):

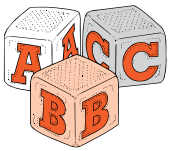
- **Have the area tested for lead-based paint.**
- **Do not use a belt-sander, propane torch, high temperature heat gun, dry scraper, or dry sandpaper** to remove lead-based paint. These actions create large amounts of lead dust and fumes. Lead dust can remain in your home long after the work is done.
- **Temporarily move your family** (especially children and pregnant women) out of the apartment or house until the work is done and the area is properly cleaned. If you can't move your family, at least completely seal off the work area.
- **Follow other safety measures to reduce lead hazards.** You can find out about other safety measures by calling 1-800-424-LEAD. Ask for the brochure "Reducing Lead Hazards When Remodeling Your Home." This brochure explains what to do before, during, and after renovations.

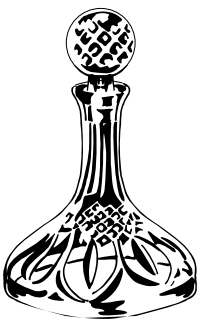
If you have already completed renovations or remodeling that could have released lead-based paint or dust, get your young children tested and follow the steps outlined on page 7 of this brochure.

If not conducted properly, certain types of renovations can release lead from paint and dust into the air.

Other Sources of Lead

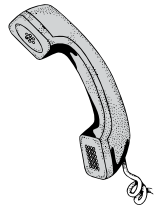
While paint, dust, and soil are the most common sources of lead, other lead sources also exist.





- **Drinking water.** Your home might have plumbing with lead or lead solder. Call your local health department or water supplier to find out about testing your water. You cannot see, smell, or taste lead, and boiling your water will not get rid of lead. If you think your plumbing might have lead in it:
  - Use only cold water for drinking and cooking.
  - Run water for 15 to 30 seconds before drinking it, especially if you have not used your water for a few hours.
- **The job.** If you work with lead, you could bring it home on your hands or clothes. Shower and change clothes before coming home. Launder your work clothes separately from the rest of your family's clothes.
- Old painted **toys** and **furniture.**
- Food and liquids stored in **lead crystal** or **lead-glazed pottery or porcelain.**
- **Lead smelters** or other industries that release lead into the air.
- **Hobbies** that use lead, such as making pottery or stained glass, or refinishing furniture.
- **Folk remedies** that contain lead, such as "greta" and "azarcon" used to treat an upset stomach.

For More Information



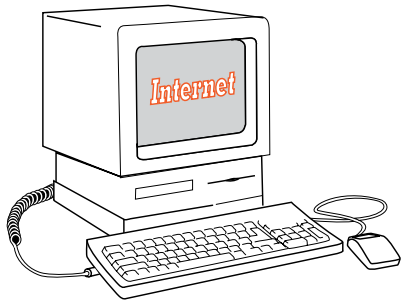
The National Lead Information Center

Call **1-800-424-LEAD (424-5323)** to learn how to protect children from lead poisoning and for other information on lead hazards. To access lead information via the web, visit **www.epa.gov/lead** and **www.hud.gov/offices/lead/.**

EPA's Safe Drinking Water Hotline

Call **1-800-426-4791** for information about lead in drinking water.

Consumer Product Safety Commission (CPSC) Hotline



To request information on lead in consumer products, or to report an unsafe consumer product or a product-related injury call **1-800-638-2772**, or visit CPSC's Web site at: **www.cpsc.gov.**

Health and Environmental Agencies

Some cities, states, and tribes have their own rules for lead-based paint activities. Check with your local agency to see which laws apply to you. Most agencies can also provide information on finding a lead abatement firm in your area, and on possible sources of financial aid for reducing lead hazards. Receive up-to-date address and phone information for your local contacts on the Internet at **www.epa.gov/lead** or contact the National Lead Information Center at **1-800-424-LEAD.**

For the hearing impaired, call the Federal Information Relay Service at **1-800-877-8339** to access any of the phone numbers in this brochure.

EPA Regional Offices

Your Regional EPA Office can provide further information regarding regulations and lead protection programs.

EPA Regional Offices

Region 1 (Connecticut, Massachusetts, Maine, New Hampshire, Rhode Island, Vermont)

Regional Lead Contact
U.S. EPA Region 1
Suite 1100 (CPT)
One Congress Street
Boston, MA 02114-2023
1 (888) 372-7341

Region 2 (New Jersey, New York, Puerto Rico, Virgin Islands)

Regional Lead Contact
U.S. EPA Region 2
2890 Woodbridge Avenue
Building 209, Mail Stop 225
Edison, NJ 08837-3679
(732) 321-6671

Region 3 (Delaware, Maryland, Pennsylvania, Virginia, Washington DC, West Virginia)

Regional Lead Contact
U.S. EPA Region 3 (3WC33)
1650 Arch Street
Philadelphia, PA 19103
(215) 814-5000

Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee)

Regional Lead Contact
U.S. EPA Region 4
61 Forsyth Street, SW
Atlanta, GA 30303
(404) 562-8998

Region 5 (Illinois, Indiana, Michigan, Minnesota, Ohio, Wisconsin)

Regional Lead Contact
U.S. EPA Region 5 (DT-8J)
77 West Jackson Boulevard
Chicago, IL 60604-3666
(312) 886-6003

Region 6 (Arkansas, Louisiana, New Mexico, Oklahoma, Texas)

Regional Lead Contact
U.S. EPA Region 6
1445 Ross Avenue, 12th Floor
Dallas, TX 75202-2733
(214) 665-7577

Region 7 (Iowa, Kansas, Missouri, Nebraska)

Regional Lead Contact
U.S. EPA Region 7
(ARTD-RALI)
901 N. 5th Street
Kansas City, KS 66101
(913) 551-7020

Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming)

Regional Lead Contact
U.S. EPA Region 8
999 18th Street, Suite 500
Denver, CO 80202-2466
(303) 312-6021

Region 9 (Arizona, California, Hawaii, Nevada)

Regional Lead Contact
U.S. Region 9
75 Hawthorne Street
San Francisco, CA 94105
(415) 947-4164

Region 10 (Alaska, Idaho, Oregon, Washington)

Regional Lead Contact
U.S. EPA Region 10
Toxics Section WCM-128
1200 Sixth Avenue
Seattle, WA 98101-1128
(206) 553-1985

CPSC Regional Offices

Your Regional CPSC Office can provide further information regarding regulations and consumer product safety.

Eastern Regional Center
Consumer Product Safety Commission
201 Varick Street, Room 903
New York, NY 10014
(212) 620-4120

Western Regional Center
Consumer Product Safety Commission
1301 Clay Street, Suite 610-N
Oakland, CA 94612
(510) 637-4050

Central Regional Center
Consumer Product Safety Commission
230 South Dearborn Street, Room 2944
Chicago, IL 60604
(312) 353-8260

HUD Lead Office

Please contact HUD's Office of Healthy Homes and Lead Hazard Control for information on lead regulations, outreach efforts, and lead hazard control and research grant programs.

U.S. Department of Housing and Urban Development
Office of Healthy Homes and Lead Hazard Control
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